



Department of the Army  
Fort Leonard Wood, Missouri

# **Integrated Cultural Resources Management Plan**

July 2001

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Prepared for  
Department of the Army  
Fort Leonard Wood  
Directorate of Public Works

2001



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## APPROVAL

This Integrated Cultural Resources Management Plan meets the requirements of DoDI 4715.3 and AR 200-4 in accordance with DA Pam 200-4.

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# 1.0 INTRODUCTION

## 1.1 Integrated Cultural Resources Management Plans (ICRMPs)

AR 200-4 in accordance with DA Pam 200-4 and DoDI 4715.3 require Integrated Cultural Resources Management Plans (ICRMPs) at each military installation that has cultural resources. An ICRMP is a 5-year plan for compliance with cultural resources statutes, executive orders, presidential memoranda, regulations, and other requirements. It is a component of the installation master plan and the commander's decision document for cultural resources management actions and specific compliance procedures. ICRMPs are internal Army compliance and management plans that integrate the entirety of the installation cultural resources program with ongoing mission activities, allow for ready identification of potential conflicts between the installation's mission and cultural resources, and identify compliance actions necessary to maintain the availability of mission essential properties and acreage. ICRMPs supersede and replace Historic Preservation Plans (HPP) prepared under AR 420-40 (AR 200-4 (4-1a)). In addition, a letter from Missouri Department of Natural Resources-Division of State Parks, May 1996 states that the 1986 Memorandum of Agreement (MOA) and the 1992 Historic Preservation Plan (HPP) are not adequate any longer related to both archaeological sites and historic structures. The MOA utilizes criteria that are not consistent with current criteria for eligibility for inclusion in the NRHP and relies too much on architectural significance. The historic context in the HPP is inadequate as well to fully comprehend cultural resources at the installation.

Although the DA PAM 200-4 serves as guidance for our outline, the Cultural Resource Manager at FLW is the delegated expert on the development of the ICRMP. The installation should have the flexibility to tailor the ICRMP to its needs. Specific items required by the regulation are included in the ICRMP although they may not appear in the order given in the regulation. Moreover, the ICRMP is not an all-inclusive document. Its intent is not to reproduce the contents of all databases, surveys, or plans but to inform the necessary parties where this information can be obtained.

The integration of cultural resources management should happen at three levels:

- With the daily activities of the installation;
- With other planning documents and;
- With outside entities

An ICRMP supports the mission of the installation and helps the installation comply with cultural resource laws. Ideally, the ICRMP proactively guides the management of cultural resources by establishing procedures that limit and reduce potential conflicts between installation mission and compliance.

## 1.2 Fort Leonard Wood (FLW)

### 1.2.1 Historical Events

- Construction began on December 3, 1940 with an emphasis on housing and training facilities for the soldiers. On April 10, 1941, the post received 10,000 soldiers, and by summer 16,000 more had arrived.
- The Sixth Infantry Division moved from Fort Snelling, Minnesota, to FLW for its training in June of 1941.
- The 1,600-building installation was designed for a capacity of 45,000 soldiers. During the first six months of 1943 a daily average of 40,000 soldiers trained in engineering, ordnance, quartermaster, medical, chemical, military police, armor, artillery, and postal skills.

- On December 18, 1942 the main prisoner-of-war (POW) camp was constructed which housed 3,000 German and Italian prisoners.
- By 1946, WW II was over and on March 23, training halted and FLW was deactivated.
- The post remained on inactive status until August 1, 1950, when it was reactivated during the Korean conflict. On March 16, 1956 it was designated the United States Army Training Center, Engineer; five days later, the Secretary of the Army declared FLW a permanent installation.
- The Vietnam conflict increased the number of soldiers stationed at the installation and accelerated building and facility improvements that continue today. Activity peaked in 1967, when post personnel trained about 123,000 soldiers.
- In February 1985, the United States Army Engineer Center (USAEC) moved to FLW from Fort Belvoir in Virginia. By the winter of 1989, the USAEC began moving into the newly built school complex. The post also inherited the responsibility of developing new engineer doctrine and equipment for tomorrow's battlefields. Currently, installation personnel are preparing for the addition of the United States Army Chemical School and United States Army Military Police School that became part of FLW in 1999.

## **1.2.2 Location and Setting**

Nestled primarily in southern Pulaski County, but extending into portions of Texas and Laclede counties, Missouri, FLW presently contains nearly 62,910 acres of the Missouri Ozarks. FLW is located about 120 miles southwest of St. Louis, Missouri, and 85 miles northeast of Springfield, Missouri. The cantonment occupies approximately 6,000 acres in the northeast portion of the fort, while ranges and impact areas occupy most of the southern half of the post.

## **1.2.3 Description**

FLW maintains a daytime service population of approximately 28,000 persons, including military personnel and dependents, United States Army Reserves, National Guard, civilian, and contract employees. The United States Army Engineer Center (USAEC) is located here along with the United States Army Chemical School (USACS) and United States Army Military Police School (USAMPS). FLW also develops new engineer doctrine and equipment for tomorrow's battlefields.

## **1.3 Mission Statements**

### **1.3.1 Department of the Army**

- Preserve the peace and security, and provide for the defense of the United States, the Territories, Commonwealths, and Possessions, and any areas occupied by the United States
- Support national policies
- Implement national objectives
- Overcome any nations responsible for aggressive acts that imperil the peace and security of the United States

### **1.3.2 Training and Doctrine Command (TRADOC)**

To prepare the Army for decisive victory in the full range of required joint and coalition operations through:

- Accessing and training the Army's soldiers and leaders and providing disciplined combined arms training environments for units

- Balanced development of concepts, requirements, and products in doctrine, training, leadership, organizations, materiel, and soldiers
- Providing readiness infrastructure for training and projecting Army forces
- Building a command environment that promotes safe, values-based, and disciplined operations

### **1.3.3 U.S. Army Maneuver Support Center (MANSCEN)**

MANSCEN is envisioned as America's training center of choice, with a values-based, multi-disciplined, innovative team, and an active partner in the Ozarks.

- Provide the Nation with values-based individuals, leaders, and teams trained in basic combat skills and engineer, chemical, military police, and transportation disciplines that are prepared for success in any future operational environment.
- Develops concepts, doctrine, force structure, materiel requirements, and experiments to ensure the vitality of the Chemical, Engineer, and Military Police Regiments.

### **1.3.4 Fort Leonard Wood (FLW)**

- Support core missions of the U.S. Army Maneuver Support Center (MANSCEN)
- Train and deploy assigned FORCES Command (FORSCOM) units
- Support assigned Reserve Component units
- Provide excellent Quality of Life facilities and services for soldiers, families, and civilians
- Promote civic and other partnerships

## **1.4 Mission Activities**

- Administrative
- Training: Chemical School, Engineer School, and Military Police School
- Third Training Brigade
- Residential: Unaccompanied personnel housing, enlisted and officer family housing
- Morale, Welfare, and Recreation
- Historical: U.S. Army Engineer Museum

## **1.5 Audience**

Who is the ICRMP directed to and who will be integrating the ICRMP into their planning process and using it on a regular basis for protection of cultural resources?

### **1.5.1 Installation Integration**

The 8 primary users of the ICRMP at the activity level are:

- Master Planning
- Natural Resources
- Range Control
- Training Support Battalion
- Landscape maintenance

- Legal counsel
- Master planning
- Building design/maintenance

### 1.5.2 Integration with Outside Agencies

These are organizations that are directly involved with cultural resource protection at FLW and will have a copy of the ICRMP at their office.

- Missouri Department of Natural Resource (State Historic Preservation Officer)
- Missouri Department of Conservation
- U.S. Fish and Wildlife Service
- ERDC: Construction Engineering Research Laboratory
- ERDC: Waterways Experiment Station
- University of Missouri at Columbia
- University of Illinois at Urbana-Champaign
- U.S. Forest Service (Mark Twain National Forest)
- Native American Tribal Governments
- Other interested parties

## 1.6 Statutes and Regulations

Statutes and regulations that pertain to the management of cultural resources on Army installations are listed below with links to each statute and regulation in blue. For a description of each, look in Chapter 3 of PAM 200-4.

### 1.6.1 Statutes

- Archaeological Resources Protection Act of 1979—[ARPA](#)—16 USC 470aa-470ll
- National Environmental Policy Act—[NEPA](#)—42 USC 4321-4370c
- [National Historic Preservation Act of 1966, as amended](#)—[NHPA](#)—16 USC 470-470w
- Native American Graves Protection and Repatriation Act of 1990—[NAGPRA](#)—25 USC 3001-3013
- American Indian Religious Freedom Act—[AIRFA](#)—42 USC 1996

### 1.6.2 Executive Orders

- [EO13007](#)—Indian Sacred Sites
- [EO13175](#)—Consultation and Coordination With Indian Tribal Governments

### 1.6.3 Presidential Memoranda

- Memorandum for the Heads of Executive Departments and Agencies dated April 29, 1994: [Government-to-Government Relations with Native American Tribal Governments](#).

## **1.6.4 Federal Regulations and Guidance**

To search for Federal Regulations online visit <http://www.access.gpo.gov/nara/cfr/index.html>

- Department of the Interior, [Curation of Federally-owned and Administered Archeological Collections, 36 CFR 79](#)

## **1.6.5 Military Regulations and Guidance**

- Department of Defense, [DoD Instruction 4715.3: Environmental Conservation Program](#)
- Department of the Army, [AR 200-4](#)
- Department of the Army, [DA Pamphlet 200-4](#): Cultural Resources Management

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## 2.0 INSTALLATION CONTEXTS

### 2.1 Installation Contexts Introduction

In managing the cultural resources of any installation, it is important to have an extensive knowledge of the geographic, prehistoric, historical, military, and mission contexts. The background sections provided below are based on several archaeological and historic preservation reports generated by the Cultural Resources Management Program since 1992.

### 2.2 Environmental Background

#### 2.2.1 Geology/Topography

This section presents basic background information on the geology, hydrology, and physiography of FLW and the northern Ozark Highlands and how these aspects of the environment affected human settlement patterns. Much of the discussion is based upon previously published sources from FLW (Ahler and Albertson 1996; Ahler et al. 1995, 97, 98, 99; Ahler et al. 2000).

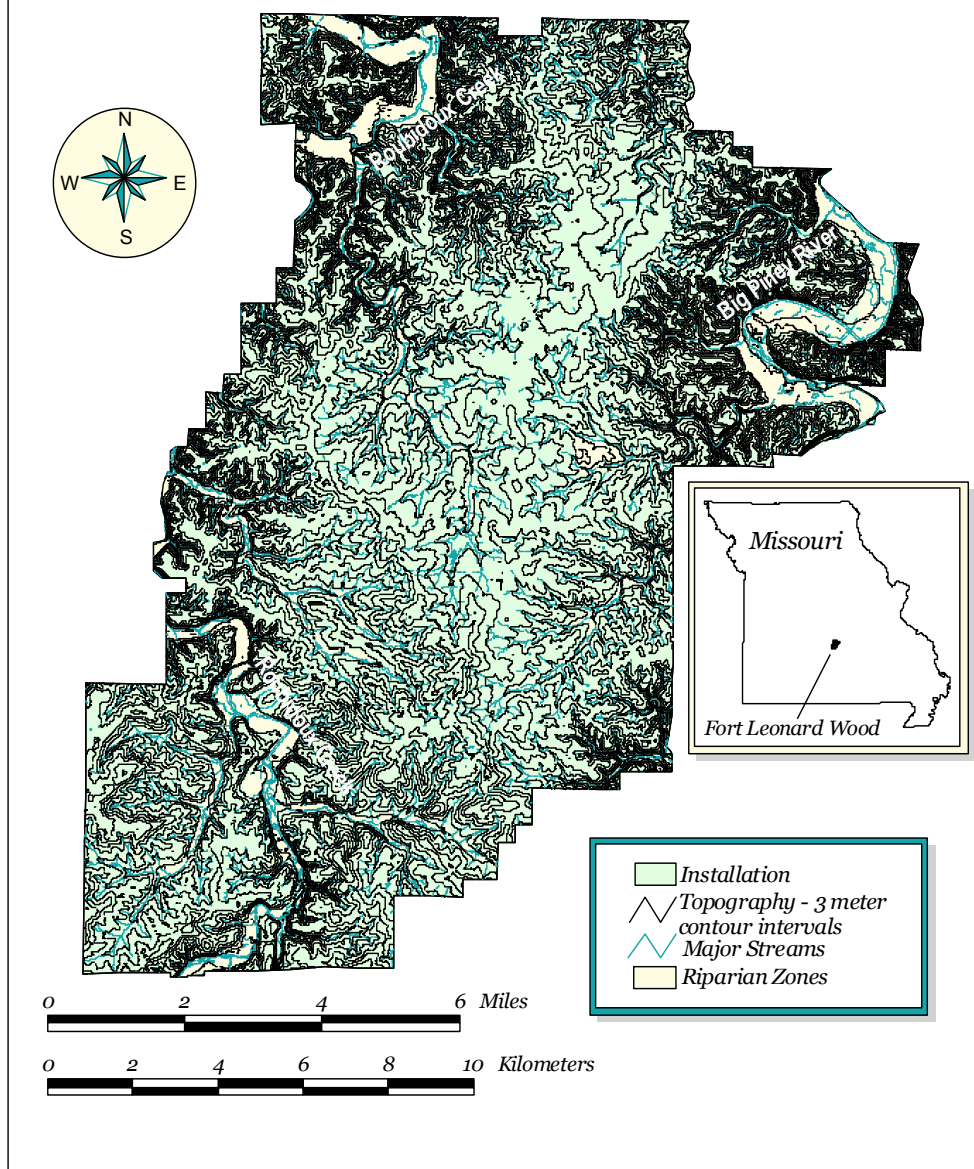
FLW is located in south central Missouri in the northern Ozark Highland region, within the Salem Plateau (eastern) portion of the Missouri Ozarks. Structurally, the northern Ozark region consists of a broad dome of Cambrian-age to Silurian-age sedimentary rock covering an apical core of Precambrian igneous rock. The Salem Plateau is dominated by Ordovician-age dolomites and sandstone that have been uplifted, incised, and dissolved by ground water over a considerable period of time, forming steep-sided meandering valleys with dendrite drainage patterns and numerous karst features. Local relief differences often exceed 60 m within a radius of 250-m (Ahler et al. 1999:5-7).

FLW occupies part of the dissected upland between the Big Piney River and Roubidoux Creek (**Figure 2.1**). These major watercourses form parts of the eastern and western boundaries of the installation, respectively and generally have wide, deeply incised valleys with extensive floodplains and complex Holocene and remnant Pleistocene terrace systems. Based on general prehistoric settlement patterns and recent analyses of associational models of prehistoric site locations (Adams 1997; Ahler 1995; Ahler and Albertson 1996; Albertson and Ahler 1996; Kreisa and Adams 1999), there is high potential for prehistoric sites to be found within and immediately adjacent to valleys containing permanent streams. Both the Big Piney River and Roubidoux Creek flow generally northward and are tributaries of the Gasconade River, which is part of the Missouri River drainage system. In addition to the installation's two major streams, portions of four other permanent streams and multiple intermittent streams are located within post boundaries (**Figure 2.1**). However, these latter streams have much smaller and narrower valleys and steeper gradients than either the Big Piney River or Roubidoux Creek, and the potential for prehistoric occupation within and adjacent to these streams is lower. Most of the acreage of FLW lies on the broad upland interfluvium between the Big Piney River and Roubidoux Creek. This zone is not as deeply dissected as the areas along the major watercourses and has distinctive geologic, soil, and biotic characteristics. The upland area has been a non-depositional surface throughout the Holocene and much of the Pleistocene (Ahler et al. 1999:5).

The numerous caves, solution cavities, rock shelters, and sinkholes in the region are characteristic of karst landscapes. These landscape features were formed by groundwater dissolving underlying dolomite bedrock along bedding planes, fissures, or other irregularities (Atwood 1940). The caves and rock shelters afforded inhabitants of the region natural shelter from the elements; most larger caves and shelters have evidence of episodic human use for several hundred to several thousand years. The distribution of caves is

# Fort Leonard Wood

## ❖ *Topography and Major Streams* ❖



**Figure 2.1:** Topography and Major Streams.

not even across the landscape. They tend to be exposed on the steep slopes near larger, more deeply incised watercourses and adjacent side valleys (Ahler and Albertson 1996; Ahler et al. 1999:5).

Elevation on the installation ranges from 220 m to 404 m ASL. However, there is considerable overlap of landform categories found at the same elevation within the installation due to the steep gradients of the major stream valleys. For example, the elevation of the Roubidoux Creek flood plain at the southern (upstream) boundary of the installation is about 305 m ASL, which is the same elevation as a ridge crest about 50 m above the Big Piney River valley in the northeastern part of FLW. Thus, elevation alone is not a good indicator of site location preference or associated biotic resources. Slope and relief are independent of landform position and show more systematic variation within the installation in general. Slope, or the closely related derivative of relief, shows greatest values along the margins of the larger stream valleys and generally decreases toward the major interfluvium in the interior of the FLW. Calculated slope values within the installation range from 0 to 41 degrees (Ahler and Albertson 1996; Ahler et al 1999:7).

The dominant rocks underlying FLW are Ordovician-age dolomites and sandstone. Four Ordovician formations outcrop within the installation, and all dip slightly to the southwest. The Gasconade formation is the oldest, and it is exposed along the Big Piney River and lower Roubidoux Creek valleys and in the lower elevations of larger tributary valleys. The Gasconade formation is mainly composed of massive cherty dolomite, with a sandstone member near the base. The Gasconade formation is overlain by the Roubidoux formation, another cherty dolomite that contains significant amounts of sandstone, orthoquartzite, and some fine sediment partings. The Roubidoux formation is exposed at the surface along upper Roubidoux Creek and in many of the steep side valley slopes dissecting the upland interfluvium between Roubidoux Creek and the Big Piney River (See Figure 1). The youngest formations are the almost-indistinguishable Jefferson City and Cotter formations, which outcrop as decomposed surface residuum on ridge crests in the central upland interfluvium area (Ahler et al. 1999:7; Anderson 1979; Ray 1985).

The structure of these geologic formations is closely linked with the presence of specific types of karst features. Most large caves on the installation are either vertical pit caves or horizontal tube-type caves, both of which are most often found in the more massive dolomites characteristic of the Gasconade formation. The Roubidoux formation, with its interbedded sandstone, orthoquartzite, and chert layers, is more conducive to formation of smaller rock shelters or solution cavities than large solution caves. Rock shelters are particularly common near the interface of the Roubidoux and Gasconade formations where a resistant orthoquartzite layer is often present (Ahler and Albertson 1996; Ahler et al. 1999:7).

All of the geologic formations contain tabular chert beds and nodules of varying quality, which were used for prehistoric manufacture of stone tools. The ubiquitous availability and virtually indistinguishable qualities of the cherts derived from these formations have implications for human settlement systems in the FLW area. Residual chert forms the subsoil of most soil series mapped on side slopes, foot slopes, and small valley floodplains, and it is also commonly found in gravel bar deposits in larger streams. Raw materials needed for prehistoric stone tool manufacture are thus abundant and readily accessible almost anywhere on the installation. The abundance, accessibility, and generally high quality of the lithic raw material affect patterns of lithic resource procurement and those portions of the settlement system linked to procurement strategies. Under the conditions prevailing at FLW, it is highly likely that procurement of lithic resources will be embedded in other settlement strategies and will not be the sole target of specific procurement sorties (Binford 1979, 1980, 1982). Because of the ubiquity of lithic materials and use of imbedded lithic resource procurement strategies, factors other than lithic raw material availability have had more pronounced effects on prehistoric settlement patterns in the FLW area (Ahler and Albertson 1996; Ahler et al. 1999:7).

A secondary effect of the chert resource characteristics noted above is that it is difficult for any lithic analyst to distinguish among the locally available and abundant chert types (Gasconade, Roubidoux, and Jefferson City/Cotter). Differential use of these resources also will be difficult to determine. As a result, it is more informative to group the Ordovician cherts into a local chert cluster and focus on identifying possible non-local lithic resources, the exploitation of which may be temporally or spatially significant. Such non-local resources include Burlington, Elsey, and light-colored versions of Pierson and Reeds Spring cherts

(undifferentiated Osagean cherts; see Ray [1985]), available west of the project area, and St. Francois rhyolite and microcrystalline igneous rocks, available to the east.

### 2.2.2 Soils

Four major soil associations are found in the installation, and they correlate closely with major physiographic divisions (see Wolf 1989). In the flattest portion of the major upland interfluvium the Lebanon-Plato association is found. These silty soils are formed in loess deposits and have variable drainage characteristics. The more dissected upland interfluvium areas and the summits and shoulders of larger ridges near the major streams are covered by soils of the Viraton-Clarksville-Doniphan association, composed of deep, well-drained silty to cherty soils. These soils formed in thin loess deposits overlying the cherty Jefferson City/Cotter dolomite residuum. The Clarksville-Gepp association covers the steep side valleys and bluffs in the major streams. These soils are thinner, well to excessively drained and cherty to very cherty. Major stream valleys and some minor valleys are covered by soils of the Nolin-Huntington-Kickapoo association. These are deep, nearly level to gently sloping, silty and loamy soils on flood plains and adjacent terraces.

The soil associations are further divided into 27 separate soil series (Wolf 1989), which are distinct mappable units found in specific physiographic settings that exhibit consistent texture, structure, and drainage characteristics. The soil series for which the above associations are named make up the largest proportion of soils in the installation. Major soil series that are correlated with various floodplain, terrace, and alluvial fan areas include Nolin silt loam, Kickapoo fine sandy loam, Huntington silt loam, Cedargap cherty silt loam, Claiborne silt loam, and Moniteau silt loam.

The soil associations and soil series have been informally linked with general site types in previous studies at FLW (Ahler 1995; Ahler and Albertson 1996; Ahler and McDowell 1993; Harland Bartholomew and Associates 1992). The broad, low relief areas in the upland interfluviums are likely locations for open habitation sites. Cairns and rock shelters, though, are unlikely to be found in these settings, and the potential for encountering buried sites is negligible in these non-depositional environments. Large, flat ridge summits near permanent streams have been identified as being more likely to contain habitation sites than are similar landforms located far from stable water sources. The steeply sloping soils of the Clarksville-Gepp association are unlikely to contain open habitation sites, but cairns, caves, and rock shelters are most likely to be found in this setting. The potential for buried sites is again negligible on these steeply sloping landforms, though colluvial deposits with cumelic A horizons located near the bluff base may contain stratified evidence of human settlement. A variety of open-air habitation sites are likely to be found in floodplains and adjacent terraces covered by the Nolin-Huntington-Kickapoo association.

In addition, there is potential for encountering buried sites in these Holocene depositional environments. Recent soil-geomorphic mapping (Albertson *et al.* 1995) identified a series of seven major alloformations (terraces) in the main permanent stream valleys in the installation, two tributary alloformations, and a variety of smaller depositional units and soil-geomorphic allomembers. Each alloformation and allomember has distinctive pedologic and physiographic signatures. These soil-geomorphic units are more strongly correlated with prehistoric sites of various ages than are the mapped soil series. A recent project (Ahler and Albertson 1996) has integrated the predictive-associational models for prehistoric site location described briefly above (see also Ahler 1995) with the soil-geomorphic units, resulting in refined predictive models for both surface and buried sites in various depositional environments on the installation (**Table 2.1**). Those initial findings have since been refined by systematic surface and subsurface survey of several large contiguous flood plain tracts, resulting in the surface and buried site potentials listed for various alloformations and allomembers. Building upon this data, the Stratified Sites Project (SSP) was recently initiated to locate tracts within FLW that are likely to contain sites with deep,

**Table 2.1:** Temporal Ranges and Archaeological Site Potential for Major Soil-geomorphic Alloformations and Allomembers Defined on FLW (after Ahler and Albertson 1996).

<u>Formation</u>	<u>Approximate Age (year BP)</u>	<u>Site Potential</u>	
		<u>Near-surface (&lt;50 cm bs)</u>	<u>Buried (&gt; 50 cm bs)</u>
T0-Cookville	0-100	None	N/A
T1-Happy Hollow	0-200	None	None
T2-Ramsey	200-1,000	Very Low	Very Low
T3-Dundas	1,000-2500	Low	Low
T4-Quesenberry	2,750-4,000	High	Moderate
T5-Miller	4,300-10,000	High	High
T5o-Miller organic	4,300-10,000	High	High to Moderate
T6-Ousley Spring	10,000-55,000	Very Low	Very Low
T7-Stone Mill	10,000-130,000	Moderate	Very Low
T7co-Laughlin	10,000->55,000	Moderate	Very Low
AF-McCann	0-55,000	Moderate	Moderate
TR1-Baldrige	0-2,000	Low	Low
TR2-Hanna	2,000-10,000	Unknown	Unknown

stratified cultural deposits with an occupational history that spans a significant portion of the Holocene epoch (Ahler et al. 2000). Soil-geomorphic data, archaeological site locations, hydrological data, and historic aerial photographs have been compiled into a GIS format for determining stratified site and large Late Woodland-age village site locations (Ahler and Albertson 1999; Ahler et al.) (**Table 2.1**).

These studies of Holocene geomorphology have focused understandably on the more dynamic alluvial environments (Ahler and Albertson 1996; Albertson et al. 1995; Ahler et al. 1997:393-395; Ahler et al. 2000). However, these studies explicitly recognized that uplands, valley margins, and valleys are all integrated components of the Holocene landscape. In particular, the geomorphic processes that dominate in valley settings might be coeval with other types of processes operating in upland and valley margin settings, creating dynamic relationships among these landscape settings. As a result of research in alluvial environments new aspects of our research has also encompassed whether valley margin sites contained sedimentary or geomorphic data that would contribute to development of these integrated models of landscape evolution.

These findings document the considerable geomorphic research potential of cave and rock shelter sites located in valley margin settings. Geomorphic analysis of sedimentary and chronological records from these contexts must take into account the landscape position of the site on the valley margin (shoulder, back slope, or foot slope position), and the presence of local factors such as colluvial fans or intermittent streams that may have severely affected local depositional and erosional processes. What cannot be readily discerned, but must also be taken into account, is the relative contribution of human and non-cultural activities to the sediment matrix in any given context. The artifact density is so high in the Late Woodland deposits at 23PU58 that human activities probably had a noticeable affect on net sedimentation rates. In contrast, the artifact density at 23PU567 is so low that human activities probably made negligible contribution to the net accumulation of sediments. Each site must be examined individually to separate

cultural from non-cultural sediment aggradations. This detailed analysis of sediments and artifact density was beyond the scope of the present project, and cannot be addressed further. However, the artifact density data are available in the various reports noted above, and sediment samples were extracted from all major strata at most of these sites, are curated at the University of Missouri-Columbia and are available for further chemical and physical analyses.

### 2.2.3 Climate

The climate of the area can be characterized as typically mid-continental, with warm summers and cool winters. Average annual rainfall is about 100 cm, distributed fairly evenly throughout the year. The driest months tend to be August, September, and October. The growing season generally ranges from 156 to 199 days, with the latest freeze occurring between April 22 and May 9 and the earliest freeze between October 2 and 17 of each year (Wolf 1989).

These climatic parameters were not stable throughout the Holocene. Evidence from pollen, gastropod, and mammal sympatric studies in the Midwest indicate that climatic change, rather than stability, has characterized the Holocene. In general, early Holocene climate was cooler and probably wetter than the present regime. The floral and faunal species present were modern in character, but their distribution was probably more patchy and fine-grained than at present (Graham and Mead 1987). A major climatic shift during the middle Holocene has been recorded worldwide (Bryson et al. 1968; Deevey and Flint 1957; Wendland 1978). This period, known as the Hypsithermal Interval, appears to involve a shift to warmer and possibly drier climatic conditions over much of the Midwest. This warmer and drier period appears to last from about 8,500 to between 4,000 and 5,000 years ago, which generally corresponds with the duration of the Middle Archaic cultural period in the mid-continent region (Brown and Vierra 1983; see Cultural Overview below). The effects of the Hypsithermal are variable, depending on local physiographic, biotic, and hydrologic conditions, but in general, several related landscape modifications appear to result from Hypsithermal conditions. Groundwater base levels appear to have dropped significantly in elevation, resulting in drying of many upland springs and seeps. There is evidence for a shift to less dense ground cover and more xeric vegetation, especially on better-drained slopes and uplands. Decreased vegetation cover probably resulted in increased upland side slope erosion and headward erosion of tributary streams. The sediment eroded from upland environments was deposited in alluvial environments during the middle Holocene, resulting in substantial amounts of sediment aggradations.

At FLW, the Hypsithermal Interval is expressed in various attributes of the archaeological and paleoenvironmental record. Albertson et al.'s (1995) study of the soil-geomorphic units and landscape evolution of the installation indicates that the middle Holocene witnessed the greatest volume of sediment deposition in valley settings. The T5 terrace or Miller formation dates from an estimated 8,500 to a terminal radiocarbon date of about 4,400 years ago and contains over twice the sediment volume of any other Holocene terrace formation. Terrestrial gastropods recovered from stratified archaeological contexts at 23PU235 (Sadie's Cave) (Theler 1995) show a shift in snail assemblage to more drought-tolerant species during the middle Holocene; by the late Holocene, the gastropod assemblage had assumed more modern compositional characteristics. Finally, analysis of fresh-water mussels recovered from Sadie's Cave and other sites on the installation (Warren 1995a-b, 1997, 1998) shows that the Hypsithermal interval impacted average stream discharge and water depth, which in turn may have affected the availability and abundance of various mussel, fish, and semi-aquatic mammal species.

These inferred changes in upland and alluvial vegetation, water tables, landforms, and associated faunal resources may have affected how humans used the landscape. In particular, there is evidence throughout the Midwest for abandonment of drier upland areas in favor of valley margin settings near abundant backwater and riverine resources, increases in settlement size or duration of occupation during the Hypsithermal, and changes in settlement strategy from residential mobility of small groups to more logistically organized systems oriented around base camps (Ahler 1984; Ahler et al. 1997, 1998, 1999; Ahler and Styles 1998; Brown and Vierra 1983; Ferguson and Warren 1990; Higgins 1990; Jefferies and

Butler 1982; Stafford 1991, 1994). Specific effects of Hypsithermal climatic changes on human settlement in the FLW area still are unknown at this time. However, given the evidence from previous studies that link various environmental changes on the installation to the Hypsithermal Interval, it is expected that some changes in human settlement systems would be observed during this time span (see McMillan and Klippel 1981; Wood and McMillan 1976).

During the late Holocene, the climate probably attained its present character, with relatively minor fluctuations recorded over the last 4,000 years. Flood plains became stabilized, and upland vegetation attained its present character as a mesic forest. Again, changes in human use of the landscape may be correlated with the advent of the late Holocene climatic regime, but the specific nature of such changes has yet to be identified.

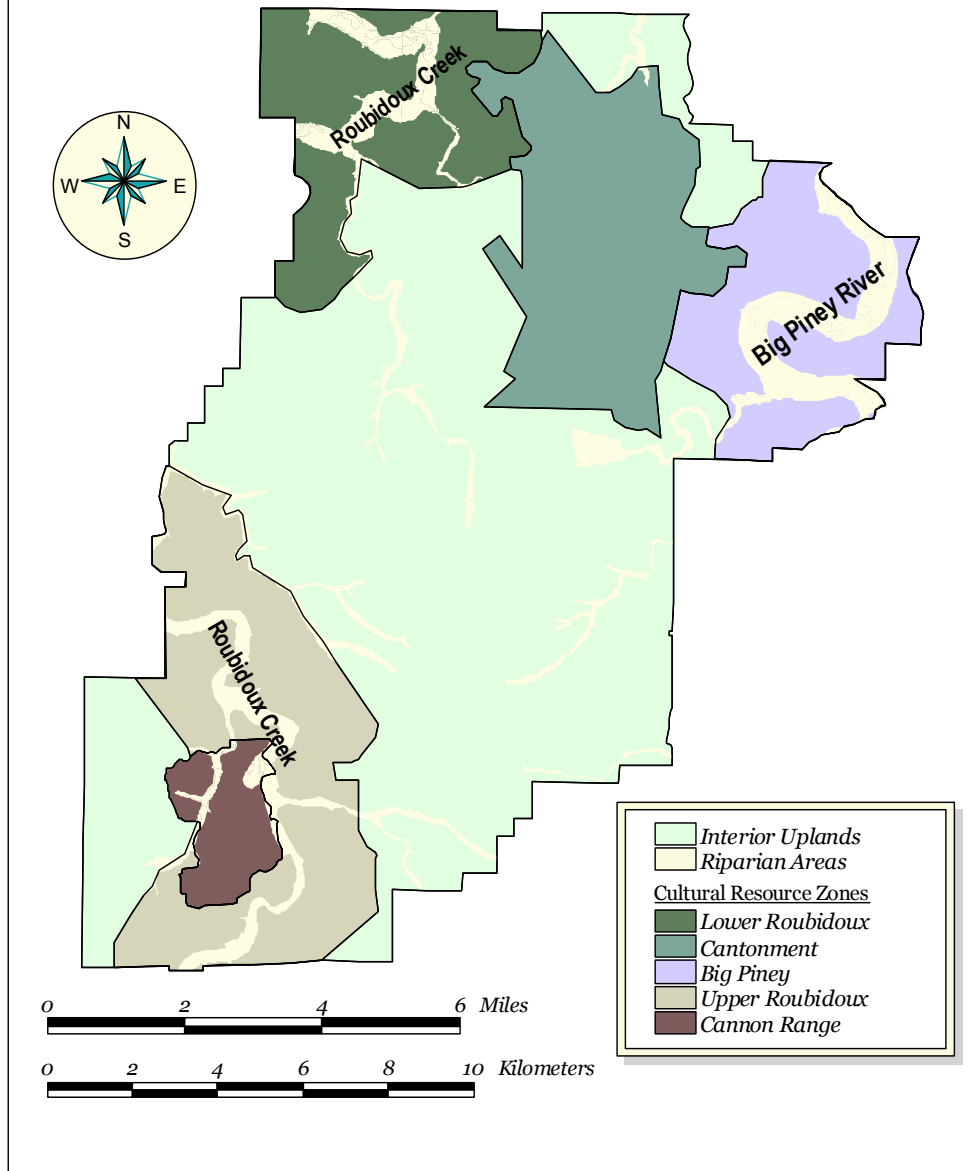
The modern natural physiographic area of the Salem Plateau region of the Ozark Highland has unique features and characteristics. These characteristics of the landscape, geology, hydrology, soils, flora, fauna, and climate interacted and in turn affected the nature, quantity, and patterns of human occupation within the region. Chapman (1975, 1980) utilized the natural divisions within Missouri to provide an environmental context with which to compare the development of long-term cultural traditions. There is often considerable continuity of cultural expressions through time within a given natural region, while differences among regions are often more pronounced. Chapman (1975) included the FLW area in the Ozark Highland archaeological-physiographic region, with Pulaski County divided between the Lower Osage and Gasconade localities. Elaborating on the concept of combined cultural and natural areas within Missouri, Weston and Weichman (1987) utilized hydrologic drainages as the major cultural/ natural divisions of the state. FLW is contained within the Gasconade Study Unit and includes portions of the Big Piney and Upper Gasconade watersheds.

Within FLW itself, smaller cultural resource zones have been defined for management and research potential (Edging 1992; Edging and Lohraff 2000). Cultural, drainage, physiographic, and soil series characteristics were used to divide FLW into five broad zones (**Figure 2.2**), each with its corresponding cultural and natural features. The Cantonment zone is located in the north central part of the installation on the major upland interfluvium between the Big Piney River and Roubidoux Creek. This zone includes the major military facilities and is viewed as having generally low potential for containing intact prehistoric cultural resources due to intensive construction and earth-moving activities. The Interior Uplands cultural resource zone covers the remainder of the primary upland interfluvium. Based upon a nearly complete installation-wide survey this zone has a much lower potential for prehistoric sites than the alluvial areas; however, historic farmsteads are numerous (Edging and Lohraff 2000; Kreisa and Adams 1999; Smith 1993, 2000). The Lower Roubidoux cultural resource zone includes the Roubidoux Creek valley and adjacent terraces and uplands in the northwest quadrant of FLW. Caves, cairns, and open sites are common in this resource zone, but rock shelters are not particularly abundant. The Upper Roubidoux cultural resource zone includes an area in the southwest part of the installation that is similar in extent to the Lower Roubidoux zone. Prehistoric site density is highest in this zone, and it includes the Dundas Site

Cluster, a large cluster of over 100 prehistoric sites centered around Dundas Ford on Roubidoux Creek. The physiographic, geomorphic, and geologic variability within the Dundas Site Cluster boundaries has undoubtedly contributed to the presence of numerous sites in this portion of the installation (see Ahler *et al.* 1998, 1999 and Kreisa and Adams 1999 for additional discussion). The Big Piney cultural resources zone includes the Big Piney River valley and adjacent terraces and bluffs in the northeast corner of the installation. Large caves, rock shelters, cairns, and both upland and flood plain open sites are common in this resource zone. Many of the open sites in valley settings have been at least partially disturbed by decades of military training activities. Some expansive areas of floodplain are also located outside FLW boundaries.

# Fort Leonard Wood

## ❖ Cultural Resource Zones ❖



**Figure 2.2:** Cultural Resource Zones



## 2.2.4 Vegetation and Wildlife

The Ozark Highland exhibits a wide diversity of plant communities, probably because of the topographic, geologic, and hydrologic variability within the region (Steyermark 1963) (Ahler et al. 1999:9). Distinctive plant communities are found on rolling uplands, poorly-drained uplands, steep slopes, flood plain terraces, flood plains, near springs and sinkholes, and in ravine bottoms (see Nelson 1987). The heavily dissected nature of the region results in a fine-grained mosaic of plant communities (see Harland Bartholomew and Associates 1992). The dominant plant communities in the region are oak-hickory and oak-pine forests with concomitant under story vegetation. The U.S. Forest Service has published species composition and distribution lists for over 40 plant communities found in the adjacent Mark Twain National Forest (Miller 1981). Proffitt (1994) and Sternberg et al. (1998) have completed a detailed list of species present at FLW. Oak forests on uplands and side slopes, with white, post, black, and blackjack oaks most common, dominate the present vegetation. The valleys support a greater variety of trees, with sycamore, ash, cottonwood, sugar maple, walnut, butternut, hackberry, red oak, willow oak, and pecan present in minor but consistent proportions. Niquette *et al.* (1983) noted the dominance of oak-hickory forests on FLW, and described cedar glade communities in scattered upland settings.

The present vegetation is substantially different from the prehistoric and early historic vegetation regimes. Schoolcraft (1853) traveled across the Ozarks in 1818 and noted that large tracts were either unforested or had stunted tree vegetation. Native Americans setting fires may have culturally promoted this vegetation pattern in the autumn to improve hunting conditions (Chapman 1946; Smith 2000). An alternative explanation may be the development of nearly impermeable fragipan soils that inhibit root growth on flat and poorly drained uplands (Rafferty 1980). Regardless of the origin of this vegetation pattern, burning was common both prehistorically and historically in the region. In other areas, large tracts of pine forest covered well-drained uplands, prairies were found on flat uplands, oak-hickory stands were present in high elevations, and cane thickets were abundant in bottomland settings. The distribution of these diverse vegetation communities undoubtedly affected prehistoric settlement and resource exploitation patterns.

Faunal species in the FLW area include those commonly encountered in the North American mid-continent. However, characteristics of the local relief, vegetation, and physiography affect the distribution and abundance of the faunal resources. The hydrology of the region is affected by the karst landscape, and even the larger side valleys often hold only intermittent streams. The permanent watercourses, including the Big Piney River and Roubidoux Creek, are clear and cool, supporting a variety of fish (Sternberg 1998; Sauer 1920) and mussel species (Warren 1993; 1995a-b, 1997, 1998). The FLW area is not close to a major migratory route, so the seasonal fluctuations of aquatic bird species (ducks, geese, swans, etc.) on prehistoric subsistence practices would probably have had less impact than along the major flyways. The most abundant large mammal in the region is the white-tailed deer, and black bears have been sighted occasionally in the area. A variety of medium-sized mammals (raccoon, squirrel, mink, muskrat, beaver, red fox, gray fox, bobcat, skunk, opossum, cottontail rabbit, and coyote) would also have been available to prehistoric inhabitants of the region (Ahler et al. 1995, 1997, 1998, 1999; Kreisa et al. 1996; Childress and Weaver 1998). Terrestrial bird species that were also of potential economic importance include wild turkey, quail, and prairie chicken. All of these species have been recovered from prehistoric archaeological contexts on the installation, confirming their importance to prehistoric subsistence.

Three federally listed endangered species have been recorded on FLW (INRHP 2000). Two federally endangered bats utilize caves at FLW (INRMP 2000:82), 23PU211 (Saltpeter Cave) functions as a gray bat (*Myotis grisescens*) maternity cave and 23PU58 (Freeman Cave) functions as a transient cave. Both of these caves are eligible to the NRHP as a result of intensive Phase II investigations and site stabilization projects conducted at these sites in 1996-1997 (Ahler et al. 1997, 1998). Two caves with documented Indiana bat (*Myotis sodalis*) hibernacula, 23PU210 (Joy Cave) and 23PU214 (Davis 2 Cave) are confirmed as NRHP eligible. Saltpeter, Freeman, Joy and Davis 2 Caves are systematically monitored throughout the year to protect both biological and archaeological resources. The other endangered species is the bald eagle that perches on the Big Piney River and Roubidoux Creek. Nine species are Missouri State listed as rare: the long tailed grebe, Cooper's hawk, sharp-shinned hawk, great egret, bluestripe

darther, blacknose shiner, mooneye, and central Missouri Cave amphipod. Federal and state-listed endangered plants include bald grass (*Sporobolus ozarkanus*), buffalo clover (*trifolium reflexium*), butternut (*Juglans cinerea*), and narrowleaf rushfoil (*Crotonopsis linearis*).

## 2.3 Prehistoric and Historical Contexts

Since 1991, the Cultural Resources Management Program has endeavored to comply with all federal preservation laws. During the process, we have been able to collect archaeological and historical data that is essential for constructing the lifeways and chronology for the Northern Ozarks and the Gasconade basin (Ahler et al. 1993, 1995, 1996, 1997, 1998, 1999; Ahler et al. 2000; Adams 1997; Kreisa 1995; Kreisa et al. 1996; Kreisa and Adams 1999; McGowan 1996; McGowan et al. 1996; Smith 1993, 1998, 2000; Smith and Edging 2000; Yelton and Edging 2000). In addition, three reports have been important in determining the age of alluvial landforms and the probability of finding buried archaeological sites on those landforms (Albertson et al. 1995; Ahler and Albertson 1996; Ahler et al. 2000). Specific areas of archaeological research addressed by FLW projects are chronology, technology, settlement, subsistence, paleoenvironments, regional interaction, geomorphology, predictive modeling, ritual and cultural affiliation. Historic research has explored the Upland South tradition, landscape history through time, Pulaski County culture history and World War II context studies. Broad themes explored through CRM research include:

- 1) **Changes in technology, settlement and population in the Northern Ozark region through time and within a particular cultural period.** CRM projects have produced a substantial amount of data on stone tool and ceramic technology, stratigraphy, radiocarbon dates, and settlement patterns. Seriation of projectile points has revealed the continuity of Gasconade populations and their relationship to other regions (Ahler et al. 1999, 2001; Edging and Ahler 2000; Kriesa et al. 1996, 2000; Kreisa 2000). Detailed lithic analyses have revealed the kinds of activities performed at each site and changes in the function of each site through time. Ceramic analysis has shown that a Middle Woodland population did exist and that two distinct phases in the Late Woodland Period are evident. It also shows that the Gasconade area may have been in contact with both the Plains/Prairie (Oneota) and the Mississippi River (Mississippian) region in the late pre-Columbian era (Ahler et al. 1999). Since 1991, 77 radiocarbon dates have been obtained from test excavations with an additional 48 dates obtained during the geomorphology study. Radiocarbon assays in context with diagnostic artifacts define each major period of the pre-Columbian sequence. Few discernible gaps exist in this sequence until AD 1400. Finally, the accumulation of survey data and the investigation of settlement patterns reveal that settlements changed from logistical to residential patterns. Survey and testing data also reveals the presence of a unique grouping of sites especially evident in the Late Woodland period known as the site complex (Ahler et al. 1995, 1997, 1998, 1999; Edging and Ahler 2000; Kriesa 2000). A prehistoric context statement that addresses many of these research issues is currently in draft form (Ahler et al 2001).
- 2) **Prehistoric subsistence and paleoenvironmental changes through time.** The recovery of subsistence remains at FLW indicates that the prehistoric inhabitants were successful hunter-gatherers. Some species present in the prehistoric era (e.g., bison, bear, elk, and wolf) no longer are native to the Missouri area (Styles and White 1997:177-204, 266-267; 1998:101-113, 161-170, 223-226; 1999:252-261). Research has shown that the Hypsithermal Period (5000-3000 BC) of dryer, warmer climate had profound effects on the northern Ozarks region. Fresh water mussels recovered from several cave and rockshelter sites indicate significant changes in the relative abundance of species reflecting long-term environmental changes. Analysis indicates that the Hypsithermal Interval had a noticeable effect on stream water depth and local vegetation regimes (Warren 1997:205-224, 267-270, 350-362, 389-391). Terrestrial gastropod shells have revealed that within the mid-Holocene, taxa associated with moist habitats all but disappeared leaving only the most drought tolerant species (Theler 1995:172). A return to cooler wetter habitats occurred in the Late Holocene. Native Americans in the Gasconade drainage, although knowledgeable with the use of starchy and oily

cultigens, did not rely on seeds to the extent that populations in the major river valleys did. Nuts were a major plant resource through time and by AD 1100 maize was a part of the diet in the Gasconade drainage (Asch 1999: 81, 145-146, 172-173, 198-199, 263-271; Schroeder 1997:94-96, 161-176, 260-265, 325-330; 1998:96-100, 158-160, 219-222; Walz 1995: 217-233; 1996:48, 60, 69, 85-90).

- 3) **Interaction with other cultural groups.** The Gasconade drainage has been considered a hinterland or at times abandoned (Chapman 1975, 1980). Given the similarity in point styles in dated contexts, it is likely that the northern Ozarks witnessed frequent interaction with the greater Midwest during the Archaic Period (8000-1000 BC) (Ahler et al. 1999). And it is also clear, based on specific point styles and ceramic types, that Northern Ozark populations traded with the northern Plains/Prairie and Mississippi River regions during the Middle Woodland and Late Woodland Periods. It appears however, that the preponderance of ceramic and mortuary data indicate that the Gasconade Late Prehistoric cultures were independent from the central Mississippi Valley (Ahler et. al. 2001; Edging and Ahler 2000; Kreisa et al. 2000).
- 4) **Investigation of site complexes.** A site complex is defined as a set of spatially clustered sites that are temporally and functionally related (Ahler et al. 1995, 1996, 1999; Edging and Ahler 2000; Kreisa 2000). Each complex consists of one or two or more caves, rockshelters, rock cairns, rock art, and blufftop and alluvial basecamps. To date, three site complexes (Miller, Ramsey, and Lohraff) located on the Big Piney River and Roubidoux Creek, have been investigated. While it is likely that many of the sites within each complex are related in time and function during the Archaic Period (8000-1000 BC), the Late Woodland components offer the most diversity and potential for research. A ritual complex of sites within each complex consists of caves, cairns, and rock art (Edging and Ahler 2000; Kreisa 2000). The investigation of site complexes at FLW has achieved several long-term management and research goals (Ahler et al. 1995, 1997, 1998, 1999; Edging and Lohraff 2000). From a management perspective, the archaeology of site complexes constitutes a unique and effective way of grouping eligible NRHP sites that will constitute formal District nominations. From a research perspective, site complexes have yielded a significant amount of archaeological data on technology, subsistence, settlement, ritual, and climatic change (Ahler et al. 1997).
- 5) **Combined geomorphic and archaeological modeling.** A systematic geomorphic mapping of the installation's two major alluvial zones (Big Piney River and Roubidoux Creek) and a study of associational models of prehistoric site locations have been completed and are essential in the discovery of stratified alluvial sites (Ahler and Albertson 1996; Ahler et. al. 2000; Albertson et al. 1995). These sites contain stratified cultural deposits that span the Holocene and offer archaeological information that cannot be obtained from cave and rockshelter sites. Stratified alluvial sites, a major component of site complexes, are poorly understood. (See the Stratified Sites Project described below.)
- 6) **Burials and other sacred sites that relate to the Native American Graves Protection and Repatriation Act (NAGPRA).** Recent investigations at the Lohraff Complex reveal the presence of a cave, two rockshelters, a rock cairn, and rock art. The symbols expressed on these rocks suggest ritual and other activities. Sites such as these are extremely significant at FLW and in the northern Ozarks. After documentation, site locations are continuously monitored. The northern Ozarks also contains a unique Late Woodland burial site, the rock cairn, thirty-two of which are located on the installation. The contents of cairns, including burial remains and artifacts, offer an important scientific database for studying prehistoric ritual, technology and health. As a ritual group within site complexes cairns, rock art, and caves should be considered as sacred sites or ritual complexes within the larger site complexes (Ahler and Edging 2001; Edging and Ahler 2000). Therefore, it is imperative that these sites be protected. Investigations conducted at several cairns in the early 1980s constitute the only information obtained from these sites, which have been exempt from testing since 1991 due to the presence of human remains (Edging and Kreisa 1996). Archaeological investigations at cave sites are aimed at salvaging information after years of vandalism. In deference to specific sections in NAGPRA that deal with inadvertent discoveries of human remains, all investigations at caves have

been suspended until consultation with affiliated Indian tribes can be completed. In FY2001, FLW continued working towards compliance with NAGPRA by establishing cultural affiliation and standard operating procedures for consultation with appropriate federally recognized Native American tribes. To date, a cultural affiliation overview has been completed and will be printed in the CERL technical series (Yelton 1998; Yelton and Edging 2000). This overview, along with the final inventory, will be submitted to federally recognized tribes that have the strongest association with FLW late prehistoric remains. At that time, SOPs that address inadvertent discoveries, and a Comprehensive Agreement that develops a long-term relationship with the appropriate Native American groups, will be drafted in FY2001-2.

- 7) **Ozark Life and Landscape, an Upland South derivation.** The single most encompassing and unifying theme defining the people, culture, ideology, and landscape of southern Pulaski County is the cultural tradition of the Upland South (Clendenen 1973; Glassie 1968; Kniffen 1965; Meyer 1975; Newton 1971, 1974; Otto and Anderson 1982; Otto 1985; Smith 1993; 2000). The Upland South defines both the cultural tradition of the white-yeoman-farmer-hunter-plain folk, and their geographical area of settlement in the mid-South and southern portions of the northern states. The Upland South defines a tradition and ideology originating between the Celtic and Welsh peoples. These groups migrated to America and initially settled in western Virginia, southern Ohio, Indiana, and Illinois, Kentucky, Tennessee, upper Alabama, Mississippi, Arkansas, Louisiana, and Texas, and eventually the Missouri Ozarks (Kniffen 1965; Newton 1974; Glassie 1968; Meyer 1975; Smith 1993; 2000). With localized exceptions, the land they settled was remarkably similar—mountainous or hilly, forested, rolling, with plentiful game, but marginal agricultural soils. The historic cultural resources in the FLW area are primarily archaeological sites that represent the material culture remains of an Upland South cultural tradition. Though little archaeological excavation or testing of the historic resources have been conducted on the installation, historic sites have been inventoried through surveys and are identified as: 1) Agricultural Sites; 2) Community Service Centers; 3) Special Activity Sites; and, 4) Transportation-related sites and may have several distinct archaeological components. These archaeological resources can be studied from specific themes that will aid in the evaluation of historic sites (Smith 1993; 2000). These themes include the Upland South Ozark Derivation, Pioneer History, the Civil War, Tie-Hacking, Lumbering, the Effect of the Railroad, and the Depression Landscape.
- 8) **The development of a regional history.** Within the framework of the cultural and geographical landscape, a regional history has been developed to manage and preserve archaeological sites and to promote the area's historic culture history (Smith 2001; Smith and Edging 2000). The first step has identified distinct chronological changes to the landscape as regional settlement progressed. The second step used these landscapes to identify a historic context, defined here as a unifying cultural theme describing the region, its people, and their historic resources. The third step integrated the history and context statement with recorded archaeological resources. From this work we developed a detailed research and management plan for the evaluation of historic sites. This approach created many layers of research that focused on how frontier and backcountry settlements changed through time. New research was added as well as additional emphasis on the Civil War, transportation, agriculture, tie-hacking, people, and landscape changes. Oral histories, photographs, maps, and illustrations were also added to descriptions and historical accounts.
- 9) **The establishment and World War II mission of FLW.** Since 1993, the Legacy Resource Management Program has been instrumental in funding projects that have preserved our World War II heritage. The restoration of World War II Black Officers' Club stonework and mural and the subsequent context study have helped establish World War II resources as significant and eligible to the NRHP (Smith 1998). Additional CRM funding was obtained for the relocation of a WWII chapel to the museum area (Edging and Lohraff 1999). The Black Officers Club and Museum Complex has become part of a historic driving-tour brochure sponsored by the FLW Museum and the Directorate of Planning and Mobilization.

The purpose of the following cultural overview is twofold: 1) to provide context for prehistoric and historic era archaeological sites based upon survey, testing, and archival studies and 2) to discuss research and compliance projects that achieved the goals of the FLW Cultural Resource Management (CRM) Program. Since 1991, the Cultural Resource Management Program has been conducted under the auspices of the Environmental Division, Directorate of Public Works, FLW, the U.S. Army Construction Engineering Research Laboratories (CERL), and the U.S. Army Waterways Experiment Station (WES). While the impetus for these projects was to comply with Federal preservation laws, the resulting information significantly enhanced an understanding of the culture history of the region.

This subsection presents a general framework of prehistoric and historic cultural history in the Ozark region and FLW in particular. The prehistoric overview is based upon regional archaeological syntheses, namely Chapman (1975, 1980), Ahler et al. 2000, O'Brien and Wood (1998), Reeder (1988), Wood et al. 1995, and Yelton and Edging (2000). The historic overview is based upon Smith (1993) and its recent revision (Smith 2000) and Smith and Edging (2000). Prehistoric archaeological research at FLW has employed a cultural-historical framework based on major syntheses of cultural developments in the Eastern Woodlands (Griffin 1967). This generalized framework has been modified to reflect local and regional cultural developments. The resulting regional framework discussed below is based upon major survey and excavation projects conducted at FLW (Adams 1997; Ahler and McDowell 1993; Ahler *et al.* 1995a, 1995b, 1996, 1997, 1998, and 1999; Kreisa 1995; Kreisa *et al.* 1996a, 1996b; Markman 1993; McGowan 1996; McGowan *et al.* 1996; Moffat *et al.* 1989; Niquette *et al.* 1983) and the Big Eddy Site, a Paleo-to-historic archaeological site west of FLW (Lopinot et al. 1998). Many of the projectile point types were taken from several Midwestern sources including Chapman (1975, 1980), Justice (1987), O'Brien and Wood (1998) and Reeder (1988). **Table 2.2** shows the general temporal framework used here for regional and local cultural periods.

The regional prehistoric cultural sequence for Missouri is divided into five major periods, some of which are subdivided into early, middle, and late subperiods. Documented cultural changes in the prehistoric era include increases in 1) population density; 2) size and duration of population aggregation; 3) the importance of locally abundant and seasonally renewable food resources; 4) the subsistence importance of cultivated plants; 5) regionalization of cultural traditions; 6) social and political complexity; and 7) importance of pan-regional ideological and exchange systems. Specific cultural or technological developments are often shared over a wide region and serve as broad area horizon markers. The Ozarks region also has its own local expression of these trends, and specific attributes are briefly discussed when appropriate (Ahler et al. 1999:15). It should be noted that this overview is heavily weighted towards a description of the Late Woodland Period (A.D. 500-1400) in the northern Ozarks. This is due to the abundant amount of data recovered from Late Woodland sites and the diversity of Late Woodland settlement/subsistence systems. From a management perspective, the period represents the closest archaeological link we have to historic era Native American populations.

During the course of this section, radiocarbon dates, projectile points, and stratigraphic records obtained from various Phase II NRHP testing projects are provided to familiarize the reader with the time depth involved in the prehistoric occupation of the Northern Ozarks. Although Phase II archaeological testing has been conducted at 50 sites, only sites that have clear dated contexts are described. For this study, we have included both radiocarbon years before present (BP) and actual calibrated years before Christ (BC). While at times confusing, years before present (BP or years ago) provides a general date that is very useful in explaining large amounts of time. However, we have tried to utilize both calibrated dates in our discussion of time ranges of point types and subsistence/settlement trends.

**Table 2.2:** Regional Temporal Periods and Local Prehistoric Cultural Manifestations in the Gasconade Drainage and FLW Area (after Ahler 1999; Kreisa et al. 2000).

Major Temporal Period	Local Manifestation
Historic (A.D. 1700-present)	Euro-American settlements
Late Mississippian (A.D. 1500-1700)	 Late Maramec Spring Phase (A.D. 900-1500)
Early Mississippian (A.D. 900-1500)	 ----- 
Late Woodland (A.D. 500-900)	Early Maramec Spring Phase (A.D. 400-900) -----
Middle Woodland (200 B.C.-A.D.500)	Spring Creek Complex (?) (A.D. 1-400?) -----
Early Woodland (1000-200 B.C.)	Freeman Caves Complex
Late Archaic (3000-1000 B.C.)	Sedalia Complex James River Complex
Middle Archaic (5000-3000 B.C.)	Big Piney River Complex
Early Archaic (7800-5000 B.C.)	Tick Creek Complex (?)
Paleo-Indian (11000-7800 B.C.)	Dalton Complex (late Paleo-Indian)
Pre-clovis or Early Man (Pre-11000 B.C.)	Big Eddy Site Complex Big Eddy Site Complex

### **2.3.1 Pre-Clovis or Early Man Period (more than 11-13000 B.C.)**

This is the most poorly understood time period in North and South America, and many archaeologists still debate its existence. Nevertheless, growing evidence supports the hypothesis that migration of Pre-Clovis peoples from Beringia occurred around 12-13000 BC or earlier (Dillehay 1989, 1997; Fiedel 1999:109; Meltzer et al 1997; Roosevelt et al. 1996). Positive recognition of Pre-Clovis sites still needs to be established, however, several radiocarbon dates and lithic assemblages (unfluted lanceolate points, bladelets, and small conical cores) have been found in various parts of the Midwest, the Eastern United States and Central and South America (Fiedel 1999:109). An example of a Pre-Clovis site in Missouri is located approximately 128 km west of FLW on the Sac River. The investigations at the Big Eddy Site have resulted in the delineation of contexts possibly containing Pre-Clovis artifacts. Early and late Paleo-Indian and Archaic and Woodland components are clearly substantiated (Lopinot et al. 1998, 2000). The Pre-Clovis component dates to ca. 13,500-12,000 BC (Lopinot et al. 2000:30). No Pre-Clovis sites have been reported from the Gasconade drainage, although Chapman (1975) indicates that river terraces and cave/rock shelters are most likely locations to provide evidence for sites of this age.

### **2.3.2 Paleo-Indian Period (11000-9800 B.C.)**

Although archaeological data may further support a late Pleistocene 14,500 BP (Fiedel 1999) or earlier date for entry into North America, the Paleo-Indian period represents the earliest unequivocal occupation of North America. Clovis migration routes via the outer coasts of Alaska and British Columbia (Fiedel 1999; Fedje and Christensen 1999; Fladmark 1979) or through ice-free interior corridors occurred between 13,000 and 11,000 BP (Anderson and Gilliam 2000). The Clovis expansion from northern Asia across the Bering Strait led to a rapid occupation of the North American continent. This is evidenced by numerous radiocarbon dates and tools recovered from across North America. The Paleo-Indian period represents several broad regional traditions under the term Clovis and is synonymous with a series of morphologically and technologically distinct projectile point/knife or hafted biface forms (Anderson and Gilliam 2000; Goodyear 1997; O'Brien and Wood 1998; Wilmsen and Roberts 1978, 1984). These point styles are lanceolate forms with long, narrow flakes removed from the base, forming a characteristic channel or flute that facilitated hafting onto bone or wood shafts. Many of the more refined specimens are made from high-quality, non-local chert, indicating a high degree of mobility and probably incipient exchange networks. Early and middle Paleo-Indian groups (Clovis) were organized into small, highly mobile groups integrated politically and socially into egalitarian bands. Settlement systems were apparently based on residential mobility and highly generalized exploiting locally available megafauna and a variety of smaller terrestrial mammal species. Patterns of plant use for Paleo-Indian groups are poorly understood.

No major early or middle Paleo-Indian sites are reported for the Gasconade drainage or FLW; however, the excavations at the Big Eddy Site have produced significant results (Lopinot et al. 1998, 2000). In recent excavations, archaeologists explored Early Paleo-Indian and pre-Clovis-age deposits down to a basal paleo-gravel bar. Although the AMS radiocarbon dates have not been received, they did record a cultural feature that should date to around 12,000 BP (Lopinot 1998). Clovis points and chipping debris were also found. The site also contained a nearly complete sequence of prehistoric occupations. A few isolated surface finds of Paleo-Indian points are reported in Chapman (1975) and O'Brien and Wood (1998) for the Gasconade drainage, though none are from Pulaski County. Caves, rock shelters, and Pleistocene-age terrace remnants (T6 and T7 contexts at FLW) are the most likely landforms on which to find Paleo-Indian sites.

By 8000 BC, the transition from late Pleistocene to Holocene environments brought about the extinction of megafauna across North America and the development of modern biotic regimes. This transition has an apparently short-lived but distinct archaeological expression in the late Paleo-Indian Dalton culture (see Anderson and Sassaman 1997; Goodyear 1982). Dalton was originally defined in northern Arkansas and southern Missouri (Goodyear 1974; Morse 1973; Morse and Goodyear 1973; Price and Krakker 1975) and is characterized by a chipped stone tool assemblage that includes the distinctive unfluted lanceolate

Dalton projectile point, chipped stone adzes, and spurred end scrapers (**Figure 2.3**). Dalton period settlement patterns and systems have been examined in detail in the southern Ozarks and Missouri Bootheel region (Morse 1975, 1977, 1998; Schiffer 1975). Settlement patterns include a variety of site types, including base camps occupied for long periods of time, resource extraction camps, smaller generalized residential camps, and special-purpose cemetery sites (Goodyear 1974; Morse 1998). The presence of this variety of site types in a single settlement system suggests that settlement was more logistically organized, perhaps oriented around exploitation of seasonally abundant resources by larger population aggregates. Unfortunately, recovery of actual subsistence remains (faunal or botanical) from Dalton sites is rare, and these settlement models remain largely untested. Notched points make their first appearance in Missouri during this period. At the Big Eddy Site, San Patrice points were found in the same contexts as Dalton points. These early notched points were outgrowths of types such as Quad, Beaver Lake, and Dalton and date to around 8000-7500 BC (O'Brien and Wood 1998:133).

Several important late Paleo-Indian Dalton components are found in Missouri, including stratified deposits at Rodgers Shelter (Kay 1982; Wood and McMillan 1976), Graham Cave (Klippel 1971; Logan 1952), Arnold Research Cave (Shippee 1966) and most recently, the Big Eddy Site (Lopinot et al. 1998; O'Brien and Wood 1998). All of these Dalton components yielded fully modern faunal assemblages with the exception of the Dalton component at Big Eddy Site, which did not yield faunal material. Three sites with Dalton or Dalton-age components have been reported from FLW. 23PU190 (Niquette *et al.* 1983) and 23PU494 (Ahler and McDowell 1993) are located in the broad upland interfluvium between the Big Piney and Roubidoux drainages. A Dalton point was recovered from 23PU235 (Sadie's Cave) during Phase II excavations (Ahler *et al.* 1995a); however, radiocarbon assays indicate that this point was redeposited out of its original context of manufacture and use (**Figure 2.3**). Numerous Dalton points have reportedly been recovered from Joy Cave (23PU210) in the mid-1970s by local relic collectors, but these finds could not be confirmed by more recent professional archaeological work (Ahler et al. 1998; Niquette et al. 1983).

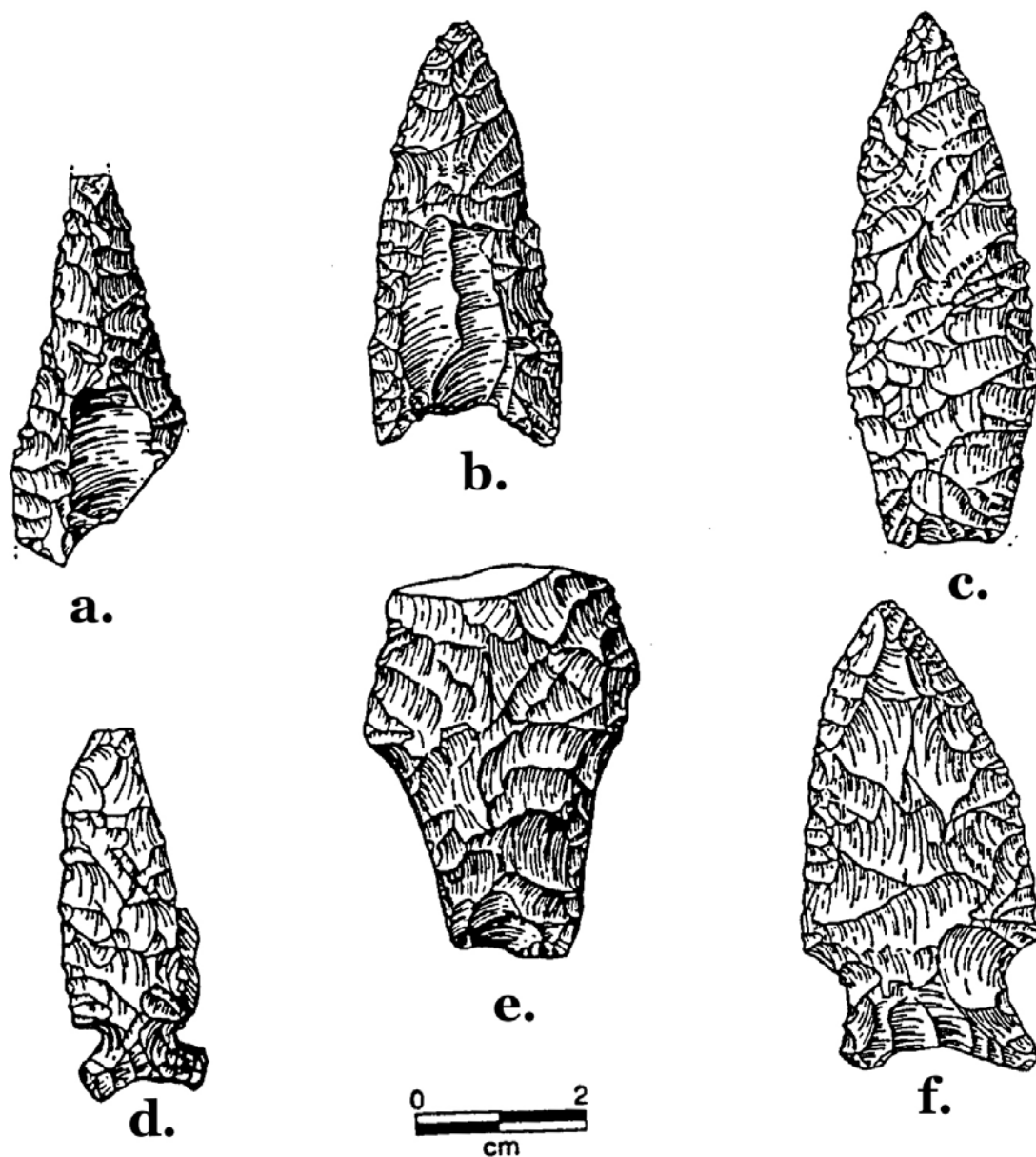
### **2.3.3 Archaic Period (ca. 7800-1000 B.C.)**

The Archaic period includes a long time span during which material culture and subsistence/settlement strategies underwent gradual diversification characterized by adaptation to local environments, long-distance exchange, and population increase. By 8000 BC, deciduous forests containing oak, chestnut, and hickory covered most of the lower Midwest. Except for a period called the Hypsithermal, (a warm dry period ca. 8000-5000 BP), when prairie grassland expanded to the east, the eastern deciduous forests were the most distinctive feature of North American environments (Watson 1989). These environments would ultimately affect the foraging strategies of Archaic groups and how they occupied the landscape

### **2.3.4 Early Archaic Period (7800-6000 B.C.)**

Although evidence from other areas of the Midwest suggests that human populations were small and that groups were relatively mobile, sites assigned to the Early Archaic are more common than the Paleo period (O'Brien and Wood 1998). Artifacts diagnostic of this period include a variety of lanceolate (Searcy, Rice Lanceolate), stemmed (Hardin, Kirk, and Hidden Valley), side-notched (Graham Cave, Big Sandy, and Raddatz), corner-notched (Kirk Corner-notched, Thebes, St. Charles, and Lost Lake), and bifurcate-base (LeCroy, MacCorkle, and Rice Lobed) projectile points (hafted bifaces) that represent both temporal and functional variability (**Figure 2.3**). Based upon securely dated contexts from Missouri, points like Hardin Barbed and Hidden Valley are considered the immediate successor to Dalton points and represent components of a hafting tradition that was coeval with notched points. Due to their superiority in design and function, hafted points replaced lanceolates around 7000 BC and persisted into the Late Archaic (O'Brien and Wood 1998:116-139). Changes in hafting are also reflected in smaller and lighter points through time.





**Figure 2.3:** Selected Late Paleo-Dalton and Early Archaic projectile points from FLW, MO: a-b. Dalton; c. Rice Lanceolate; d. Grahm Cave; e. Hidden Valley; f. Jakie-Stemmed (courtesy Illinois State Museum and University of Illinois at Urbana-Champaign).

The Ozark highland region contains a number of sites with significant Early Archaic components. These include Jakie Shelter, Pigeon Roost Creek, the Rice Site, Standlee Shelter, Rodgers Shelter, and Tick Creek Cave. The suite of hafted bifaces listed above compares favorably with many of the hafted bifaces described by Roberts (1965) and McMillan (1965) in their original description of the Early Archaic Gasconade Tick Creek Complex. Based on work in other portions of the Midwest, it is likely that the temporal and functional variability represented by the Tick Creek Complex can be separated into more restricted temporal phases through excavation of more finely stratified sites. West of FLW, the Big Eddy Site contained a large Early Archaic component that ranged from  $9525 \pm 65$  BP to  $8190 \pm 60$  BP. The oldest Early Archaic levels contained a possible Dalton transitional Graham Cave Side Notched point. Several blades similar to Rice lanceolates occur and are considered western variants such as Packard lanceolate (Ray 1998:145-146). Hidden Valley, Searcy, and Graham Side Notched points were also recovered in the later Early Archaic levels (**Figure 2.3**).

Early Archaic site size and locations suggest that populations were composed primarily of small, mobile, residential groups organized into bands. Local populations may have coalesced periodically into larger aggregates to take advantage of seasonally abundant resources, but these were probably episodic events of fairly short duration. Early Archaic subsistence may have included more plant resources than earlier periods, but this may also be a factor of better preservation of archaeobotanical remains in younger deposits.

Eight sites were identified in the Big Piney and Upper Roubidoux cultural resource zones through recent surveys (Adams 1997; Ahler and McDowell 1993; McGowan 1996). Archaeological survey suggests that Early Archaic sites on FLW are usually small and situated mainly on uplands and high Pleistocene terraces (T7 formations); however, sites have been found in other locations. Caves, rockshelters, and open alluvial base camps have yielded Early Archaic points. Intensive Phase II NRHP testing has been conducted at a number of Early Archaic sites including 23PU2 (Miller Cave), 23PU370 (Warthog Site) (Ahler et al. 1995a-b; Markman 1993), 23PU210 (Joy Cave), 23PU211 (Davis Cave 1), 23PU556 (Crying Hawk) (Ahler et al. 1999; Kreisa et al. 1995), 23PU482 (Kreisa 1995), 23PU452, 23PU565 (Little Freeman Cave), 23PU594, 23PU485 (Ahler et al. 1997; Kreisa et al. 1996), 23PU483, and 23PU264 (Red Oak Shelter) (Childress and Weaver 1998). At 23PU2 (Miller Cave), Rice lanceolate points from dated contexts yielded a radiocarbon assay of  $8500 \pm 80$  B.P. (calibrated 7525 B.C.) (Markman 1993:61; Ahler et al. 1995) (**Figure 2.4**). Another Rice Lanceolate point made from non-local Burlington chert was recovered from 23PU235 (Sadies Cave) in Stratum 4 (**Figure 2.3**). The size and shape of the Rice points is very close to dated artifacts recovered from Missouri and Illinois (Ahler 1993; O'Brien and Wood 1998:117) (Figure 2.3). Although no diagnostics were recovered in one unit at 23PU565 (Little Freeman Cave), flaked tools, bone, and a charcoal sample were recovered. The charcoal provided an uncalibrated radiocarbon assay of  $9100 \pm 230$  B.P. Other units hint at an Early Archaic occupation with the recovery of a Rice Lanceolate base in the lower levels of Stratum 3.

On Roubidoux Creek, excavations at 23PU264 (Red Oak Shelter) yielded a complete Jakie Stemmed projectile point between wood charcoal in level 11 dated to  $7900 \pm 70$  B.P. (7010 [6670] 6535 B.C.) and mussel shell in level 15 dated to  $9400 \text{ B.P. } \pm 70$  (8865 [8465] 8355) (Childress and Weaver 1998:111-113) (**Figure 2.3**). Traditionally, Jakie Stemmed has been viewed as a Middle Archaic point type; however, recent investigations in southern Missouri suggest that this type has its origins in the Early Archaic. More importantly, evidence across the installation supports the occupation of the FLW area at the Paleo Dalton/Early Archaic boundary.

### 2.3.5 Middle Archaic Period (6000-3000 B.C.)

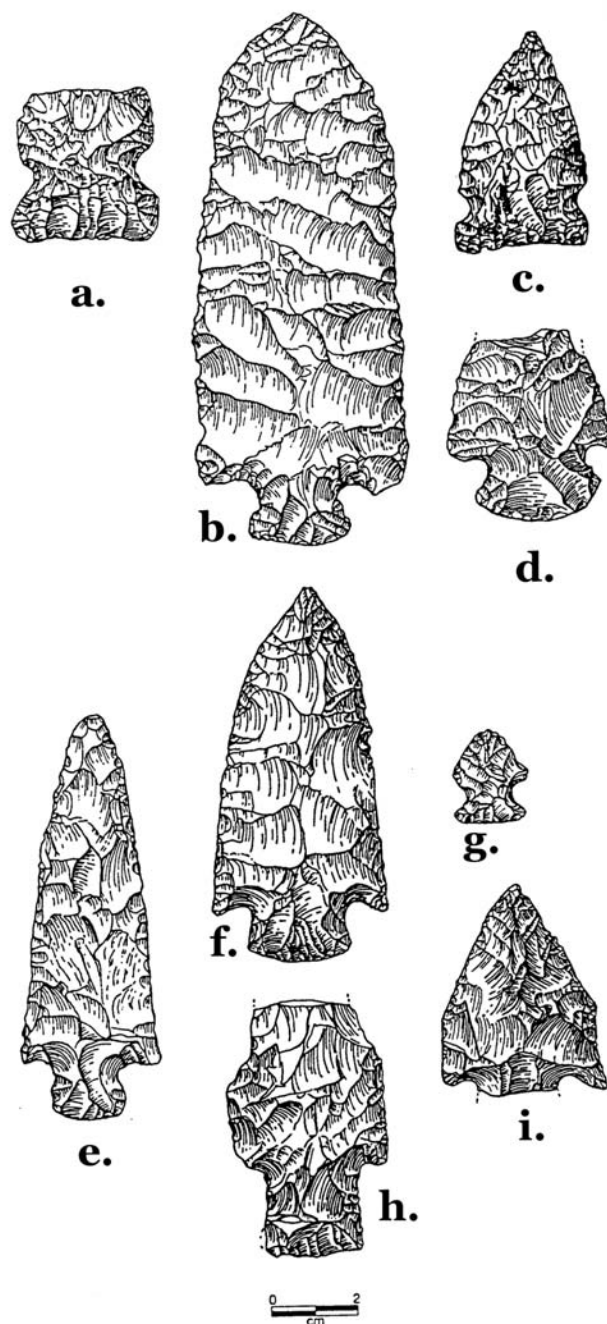
In the Midwest, the Middle Archaic period is marked by a shift in settlement toward major river valley margins and increasing use of aquatic resources by larger populations. Prairies displaced forests in most upland and many bottomland physiographic zones (Ahler et al. 1999; O'Brien and Wood 1998:157). In response to changing environments, Middle Archaic peoples adapted to a more diversified subsistence strategy including hunting, fishing, and plant food gathering. Several technological innovations occurred during this period. Manos were used for processing plant foods. Drills, abraders, awls, and needles attest to a rich material culture and new adaptations to local environments. New tool types such as ground stone grooved axes, celts, and atlatl weights appear in the Middle Archaic and suggest that tools and hunting were more efficient. Groups occupying a variety of base camps and extractive sites organized subsistence activities in planned seasonal movements. The seasonal round or cyclical exploitation of a varied resource base created a need for special-purpose camps. These include semi-permanent base camps, hunting, processing, and extraction camps.



**Figure 2.4:** Miller Cave (23PU2) (courtesy Joe Proffitt, Natural Resources Branch FLW).

Hafted bifaces characteristic of this period include large side-notched points (similar to Godar points or what Justice [1987] refers to as the Large Side-notched Cluster), small side-notched points (Raddatz), small corner-notched points (Jakie Stemmed in the early part of this time span [see above]), medium to large corner-notched/expanding stem points (Big Creek types characteristic of the latter part of

the time span), and large straight-stem points (Stone Square Stem and Smith Basal Notched in the latter part of the period) (**Figure 2.5**). Based on radiocarbon dates in stratified contexts, other researchers suggest that Stone Square Stem and Smith Basal Notched points are firmly in the Late Archaic around 1700-1000 B.C. (O'Brien and Wood 1998:131). Temporal placements need to be addressed through a synthesis of stratigraphic, lithic, and radiocarbon data currently underway at FLW (Ahler et al. in progress). No specific Middle Archaic phase or material complex has been defined for the Gasconade drainage, although McMillan (1965) described several points characteristic of a general Middle to Late Archaic complex. Several of the point types characteristic of the late Middle Archaic period continue to be made into the Late Archaic period, which may create some confusion when assigning point types to time periods without independent dating information. Ozark sites with major Middle Archaic occupations include Rodgers Shelter, Jakie Shelter, the Rice Site, Standlee Shelter, and possibly Tick Creek Cave. Investigations at the Big Eddy Site resulted in the recovery of relatively few Middle Archaic artifacts (Ray 1998:140).



**Figure 2.5:** Selected Middle to Late Archaic projectile points from FLW, MO: a, Godar; b, Benton; c, Raddatz; d, Saratoga Stemmed; e, Etley; f, Smith Basal-Notched; g, Table Rock Stemmed; h, Stone Square Stemmed; i, Afton (courtesy Illinois State Museum and University of Illinois at Urbana-Champaign).

Interpretations of Middle Archaic settlement patterns and systems at FLW will have implications for the broader region. In part, changes in settlement systems during this period are probably a result of the impact of the Hypsithermal climatic interval on local upland and riverine resource distributions. As noted above, specific local effects of the Hypsithermal are highly variable, but recent analyses by Theler (1995)

of a terrestrial gastropod assemblage from 23PU235 (Sadies Cave) on FLW show that the Hypsithermal did have an effect on local climatic and vegetative regimes (Ahler 2000:20). However, analysis of features and faunal remains in stratified contexts from 23PU235 (Sadie's Cave) (Ahler *et al.* 1995b) and 23PU565 (Little Freeman Cave) showed intensive use of blufftop, caves, and rockshelters overlooking major streams (Ahler *et al.* 1997, 1998, 1999). This reflects little change in the use of these sites throughout the Middle Archaic. The increase in the use of eastern cottontail, prairie chicken, and deer, in Middle Archaic faunal assemblages at Little Freeman and other cave sites suggests open forest and prairie nearby. The dominance of deer and squirrel in the faunal assemblage also suggests that open forest habitats were prevalent throughout this period (Styles and White 1997:203). Fish use appears to increase during the Middle Archaic centering on gar, sunfish, catfish, and redhorse species that occur today in the Big Piney River. Bird use also increases during the Middle Archaic. Species include coots, pied-billed grebes, and ducks.

Finally, Albertson *et al.* (1995) document a major period of sedimentation in the stream valleys on FLW, which generally corresponds with the onset and duration of the Hypsithermal Interval (7000-5000 B.P.). The alloformations with the largest volume of sediment (T5 and TR2) were deposited primarily during this period. This corresponds chronologically with the decrease in stream discharge in Illinois and Missouri (Hill 1975; Klippel *et al.* 1978; O'Brien and Wood 1998:106). These findings suggest that more sites need to be examined for evidence of climatically linked changes in settlement, subsistence or site functions.

Based on the documentation of only moderate numbers of Middle Archaic artifacts from sites in the Gasconade drainage, Chapman (1975) proposed that mainly populations with base camps located outside the drainage used this region. This conclusion may be an artifact of sampling, since Middle Archaic sites are numerous at FLW. Based on the recovery of side-notched points, which are the least ambiguous temporal markers for the Middle Archaic period, at least 25 sites with Middle Archaic components have been documented (Adams *et al.* 1997, 1998, 1999; Ahler and McDowell 1993; Kreisa 1995; Kreisa *et al.* 1996), Markman and Baumann 1993; McGowan *et al.* 1996; Moffat *et al.* 1989; Niquette 1984; Niquette *et al.* 1983).

Intensive Phase II NRHP evaluations have been conducted at 23PU209 (Saltpeter Cave), 23PU210 (Joy Cave), 23PU211 (Davis # 1), 23PU235 (Sadie's Cave), 23PU368 (Ahler *et al.* 1995, 1998; Kreisa 1995), 23PU251, 23PU457 (Kreisa 1995), 23PU554 (Ramsey Base Camp), 23PU556 (Crying Hawk), 23PU565 (Little Freeman Cave) (Ahler *et al.* 1996, 1997, 1999; Kreisa *et al.* 1995), 23PU481 (Kreisa *et al.* 1996), 23PU483 (Childress and Weaver 1998), 23PU607 and 23PU719 (Albertson Rockshelter) (Ahler *et al.* 1999). At 23PU235 (Sadies Cave), 23PU565 (Little Freeman Cave), and 23PU554 (Ramsey Basecamp), as well as other sites at FLW, stratified contexts indicate a permanent Middle Archaic population.

At 23PU235 (Sadies Cave), the Middle Archaic Strata 3-5 dates of  $7450 \pm 180$  B.P. (6435 [6225] 6055 B.C.) and  $6520 \pm 70$  B.P. (5480 [5440] 5340 B.C.) bracket a large side-notch point, lithic debitage, and a large collection of faunal and botanical remains. Feature 2, located at the bottom of Stratum 3, revealed a cache of stone and bone tools. Radiocarbon dates obtained from wood charcoal yielded a date of  $7780 \pm 70$  B.P. (5480 [5440] 5340 B.C.). At 23PU554 (Ramsey Base Camp), rock features with caches of flat and convex-pitted stones indicate that this site was used as a nut-processing locality. A late Middle Archaic Stone Square Stemmed Point was recovered in association with these features (**Figure 2.5**). At 23PU565 (Little Freeman Cave), a deep Middle/Late Archaic Stratum is present. To determine the age of this stratum, radiocarbon samples taken from the upper levels in an intact feature yielded an uncorrected assay of  $4120 \pm 70$  B.P. Radiocarbon samples recovered from Stratum 3, Level 4, produced an uncorrected date of  $5810 \pm 80$  B.P. Two Stone Square Stem points found in this level suggest that this point type does extend back into the Middle Archaic (See Above). A Smith Basal-notched point was also recovered from Stratum 3 pitfills that represents a late Middle Archaic level (**Figure 2.5**). The lower levels of Stratum 3 produced an uncorrected assay of  $7450 \pm 130$  B.P. In level 7 of this stratum, a large side-notched point similar to Raddatz was recovered. Stratum 4 produced an even earlier date of  $8110 \pm 80$  B.P.

Although many of the intensive Phase II investigations focused on caves and rockshelters due to their significance and the severity of vandalism, alluvial terrace sites were also targeted. These sites often contain stratigraphic sequences that chronicle the history of landforms and the peoples that lived on these landforms. For example, excavations at 23PU457, a T5 terrace site overlooking the Big Piney River, yielded numerous projectile points ranging from Early Archaic to Late Woodland. Intact deposits included Early and Middle/Late Archaic Strata that produced a Graham Cave and Smith Basal-Notched points. No radiocarbon samples were recovered. At 23PU251, a mid-Holocene (T5) terrace site overlooking Roubidoux Creek, geomorphic and archaeological data were essential in determining the age of the terrace. Although not associated with diagnostic projectile points, a radiocarbon sample taken from 90-100 cmbs produced an uncorrected date of  $5920 \pm 60$  B.P. This date is within the time frame for deposition of the Miller formation sediments, which has been assigned a mid-Holocene (Middle Archaic) age by Ahler and Albertson (1996) and Albertson et al. (1995) (Ahler 1995) (See Environmental Section above).

### 2.3.6 Late Archaic Period (3000-1000 B.C.)

In many parts of the Eastern Woodlands this period is synonymous with widespread social and economic changes including population growth, the development of regional and interregional exchange networks, and the use of native and tropical domesticated plants. These trends are seen as responses to changing subsistence and settlement patterns, which may have relieved some of the ecological stress brought on by population growth and decline in procurement territories. An increase in population is suggested for the Midwest since Late Archaic sites seem to be ubiquitous across the landscape. Located along the primary watercourses, Late Archaic sites that functioned as base camps may have been aligned with hunting, extraction, and processing sites located nearby or removed from the riverine areas. Residential base camps would be characterized by aggregation of bands during summer and winter providing mechanisms for exchange, ritual, and kinship ties. Upland and interriversine sites were essential for exploiting resources not found in riverine habitats. Nuts from the oaks (*Quercus sp.*), chestnut (*Castaneda dentada*), and hickory (*Carya sp.*) were nutritional foods that could be gathered, stored, or processed with maximum returns for the labor expended (Edging 1984, 1995; Ford 1977; O'Brien and Wood 1998:158).

A general subsistence model for the Late Archaic includes wild plant and cultivated/domesticated harvests, fish, aquatic animals, and small game that could be consumed or stored in the summer season. An intensive harvest of nuts, wild plants, and the hunting of white-tailed deer, bear, and elk in upland forests during the fall followed. Upland plant and animal species exploited took task groups to their greatest range from riverine settlements. This may account for smaller, transient base camps and ancillary short-term camps. In the winter, base camps utilized stored foods and hunting. With spring, the cycle began again with special task groups reoccupying upland habitats. Floodplain resources, largely dormant in the winter, again supplied settlements with a variety of wild and cultivated plants, small game, and aquatic species.

Late Archaic stone tool technology in the Ozarks marked a shift from side-notched points to a dominance of corner-notched points. Large side-notched types seem to drop out of the assemblage, but the medium and large corner-notched/expanding stem points are made throughout the Late Archaic period and possibly much later (O'Brien and Wood 1998:144-149). New hafted bifaces include corner-notched (Afton), stemmed (Etley), and lanceolate (Sedalia and Nebo Hill) types (**Figure 2.5**). As stated above, O'Brien and Wood (1998) suggest that Stone Square Stemmed, Smith Basal Notched and Table Rock Stemmed points belong exclusively in the Late Archaic period (**Figure 2.5**). However, data from FLW suggest that Stone Square Stemmed may have its roots in the latter part of the Middle Archaic (Ahler et. al. 1997). During the Late Archaic period, distinctive non-projectile point tool types include the triangular, unifacial Clear Fork gouge (possibly used as a woodworking tool) and the rectanguloid, bifacial Sedalia Digger. A greater variety of ground stone tools (3/4-groove axes, celts, pestles, manos, bannerstones, and plummets) is also present in Late Archaic assemblages, and many of these tools are associated with plant processing. Increased reliance on plants is supported by recovery of some of the

earliest domesticated squash, gourd, and sunflower remains in the eastern United States from Late Archaic contexts at Phillips Spring, (Chomko 1978; Kay *et al.* 1980; Newsome *et al.* 1993). Squash/gourd remains have also been recovered at 23PU235 (Sadie's Cave) (Walz 1995) and 23PU421 (Hollinger and Walz 1996), but these remains were found in Late Woodland contexts.

Late Archaic components are common in many of the caves and open sites described above. Moreover, although the deepest strata have received the most attention at the Big Eddy Site, Late Archaic artifacts and features were also found (Lopinot *et al.* 1998). Ray (1998) reports that Late Archaic point types such as Smith Basal Notched, Stone Square-Stemmed, Etley, and Afton Corner-Notched were found together. In another portion of the site, a thicker better-stratified zone revealed some separation of point types. Smith-basal notched and Etley points were found below a local Williams's component. A later component contained Afton and Table Rock points. Radiocarbon dates indicate that the Smith-basal notched and Etley points date to early in the Late Archaic sequence and were used throughout the period. Although both point types are often found in the same occupational levels at sites in west central and southwest-central Missouri, there seems to be a regional separation with Etley points dominate in east-central and NE Missouri and Smith Basal Notched prevalent in central, western, and SW Missouri (Chapman 1975; Kay 1983; O'Brien and Wood 1998:145; Ray 1998:131; Robinson and Kay 1982).

Late Archaic sites are common on FLW, with at least 22 sites having components assigned to this period (Ahler and McDowell 1993; Ahler *et al.* 1999; Markman and Baumann 1993; McGowan 1996; McGowan *et al.* 1996; Moffat *et al.* 1989; Niquette 1984; Niquette *et al.* 1983). Phase II NRHP investigations with Late Archaic components have been conducted at 23PU492 (Surprise Shelter), 23PU249, 23PU235 (Sadies Cave), 23PU368, 23PU457, (Ahler *et al.* 1995; Kreisa 1995) 23PU58 (Big Freeman Cave) (Ahler *et al.* 1997; Kreisa *et al.* 1995), 23PU421, 23PU424, 23PU481 and 23PU556 (Crying Hawk) (Kreisa *et al.* 1996), 23PU554 (Ramsey Base Camp) (Ahler *et al.* 1997), 23PU483, 23PU458, 23PU354 (Childress and Weaver 1998), 23PU683 and 23PU719 (Albertson Rockshelter) (Ahler *et al.* 1999). On Roubidoux Creek at 23PU492 (Surprise Shelter), intact cultural deposits were discovered that contained numerous flakes, tools, faunal/botanical remains and charcoal that produced radiocarbon assays in Stratum 3-4 from  $3940 \pm 100$  B.P. (2566 [2465] 2231 B.C.) to  $3310 \pm 90$  B.P. (1689 [1589] 1456 B.C.). At 23PU719 (Albertson Rockshelter), numerous projectile points were recovered, many from dated contexts. In the upper layers near the mouth of the rockshelter, overburden from previous pothunting inadvertently protected a buried A horizon in Stratum 2. One radiocarbon sample taken from Stratum 6 (240-260 cmbs) produced a date of  $3820 \pm 90$  B.P. (2450 [2280, 2230, 2210] 2060 B.C.), indicating a Late Archaic occupation. Two Late Archaic points, Benton and Ledbetter, were recovered in the back of the rockshelter in Stratum 6.

On the Big Piney River, Late Archaic dates and artifacts were recovered from intact deposits at 23PU235 (Sadies Cave). Four radiocarbon dates range from  $4390 \pm 120$  B.P. (3310 [2985] 2895 B.C.) in Stratum 2 to  $3800 \pm 90$  B.P. (2400 [2200] 2040 B.C.) in a shallow basin feature. The latter date was associated with a Williams side-notched similar to those described by Ray (1998:135) for the Big Eddy Site. At 23PU565 (Little Freeman Cave), a deep Middle/Late Archaic Stratum is present. To determine the age of this stratum, radiocarbon samples were taken from the upper and lower levels in an intact layer that appear to span the Middle and early part of the Late Archaic. Pitfills sampled in Test Units 7 and 9 contained four projectile points. One specimen is a Big Creek corner-notched commonly found in assemblages dating to the late Middle Archaic through Late Archaic periods. Also found was a Smith Basal-notched point indicating a late Middle Archaic presence. Finally, a Rice Lanceolate and possible Early Archaic Jakie Stemmed point were recovered and suggest that the pitfills incorporated lower occupational levels.

Two local Late Archaic cultural manifestations have been defined for areas adjacent to FLW. The James River Complex is based on assemblages from Table Rock Reservoir and includes Afton, Smith Basal Notched, Stone Square Stemmed, and Table Rock point types (Chapman 1975:186). The Sedalia Complex is centered in the lower Missouri and Osage drainages and includes Etley Stemmed and Sedalia Lanceolate point types (Chapman 1975:200-203). A review of previous reports indicates that no Sedalia points or Sedalia diggers have been recovered from FLW. Late Archaic sites at FLW lack the diagnostics



associated with the Sedalia Complex, and the installation's geographic and physiographic position make a James River Complex association unlikely.

Salient features suggested for the Midwest at the end of the Archaic Period include extensive exchange, increased mortuary ritual, population increase, horticulture involving both native and introduced plants, increased sedentism, and the growth of clear regional traditions. These trends may have altered the nature of the seasonal round and settlement patterns. With settlements and seasonal camps logistically tied and attuned to seasonal resources, any disruption or restriction of territories caused by population growth may have fostered adaptive responses in the major river valleys. In areas removed from the major river valleys such as the northern Ozarks, variations on these trends occurred. Based on the sheer number of sites in the Gasconade drainage, it is apparent that the northern Ozarks had a permanent population and were not exploited exclusively by groups based along the major river valleys.

### **2.3.7 Woodland Period (1000 B.C.-A.D. 1500)**

An understanding of the Woodland period in the Northern Ozarks is in some manner as dependent upon past archaeological models as on current archaeological data (Kriesa et al. 2000). The lack of well-documented chronological markers, whether projectile points or pottery, has caused an interpretation of the Woodland period that stresses conservatism and marginality. However, archaeological data from FLW has led to the interpretation that the Woodland period, in contrast to earlier models, had a continuity of population and a logical adaptation to the northern Ozarks environment.

Much of the debate concerning the Woodland period was set by Carl Chapman (1975, 1980) who defined two themes regarding the prehistoric occupation of the northern Ozarks: cultural conservatism, and low or no population during particular time periods. Chapman believed that prehistoric cultures in the Ozarks evidenced a continuation of earlier patterns after the disappearance of these lifeways in other regions. Population in the area was characterized as low or lacking, perhaps as a result of use of the area by hunting groups, or its maintenance as an uninhabited buffer zone between more complex cultural groups (Chapman 1980:169; Emerson and Hughes 2000). Willey and Phillips (1958) accepted much of this interpretation in their classic *Method and Theory in American Archaeology* by stating that the Ozarks was impervious to cultural influences from centers of development, such as those in the Mississippi River valley. Brown (1984) later successfully dispelled this argument for the southern Ozarks region. Likewise, Reeder (1988) views the northern Ozarks Middle Woodland as essentially unrecognized due to a lack of distinctive Hopewellian ceramics. O'Brien and Wood (1998) also explore these issues and the problems associated with depending upon other regions to define Woodland manifestations in the northern Ozarks. Moreover, recent research by Emerson and Hughes (2000) offers new insights into the use of this region by not-so-distant polities like Cahokia.

### **2.3.8 Early Woodland Period (1000 to 200 B.C.)**

In the Midwest, well-defined Early Woodland manifestations are generally limited to portions of the Illinois and Mississippi River valleys where distinctive ceramic and projectile point styles have been identified in dated and stratified contexts (Farnsworth and Emerson 1986; O'Brien and Wood 1998). In contrast, Chapman (1980) and others working in the region expressed the opinion that the northern Ozarks may have been essentially devoid of human occupation during the Early Woodland. The most recent synthesis of Missouri prehistory (O'Brien and Wood 1998) includes passing mention of possible Early Woodland manifestations in the northern Ozarks, while Martin's (1997:75-78) recent Early Woodland report focused briefly on the Ozark Highland and offered site data from the Pomme de Terre, Rodger's Shelter, and Ozark border region in SE Missouri (Price 1986; Wood 1976:103). A recent paper synthesizing the Late Woodland Maramec Spring Phase (Reeder 2000) asserts that there was no existing population with Woodland adaptive strategies present in the region prior to the Late Woodland period. Reeder's (2000) assertion was based upon archaeological data from the Gasconade prior to available



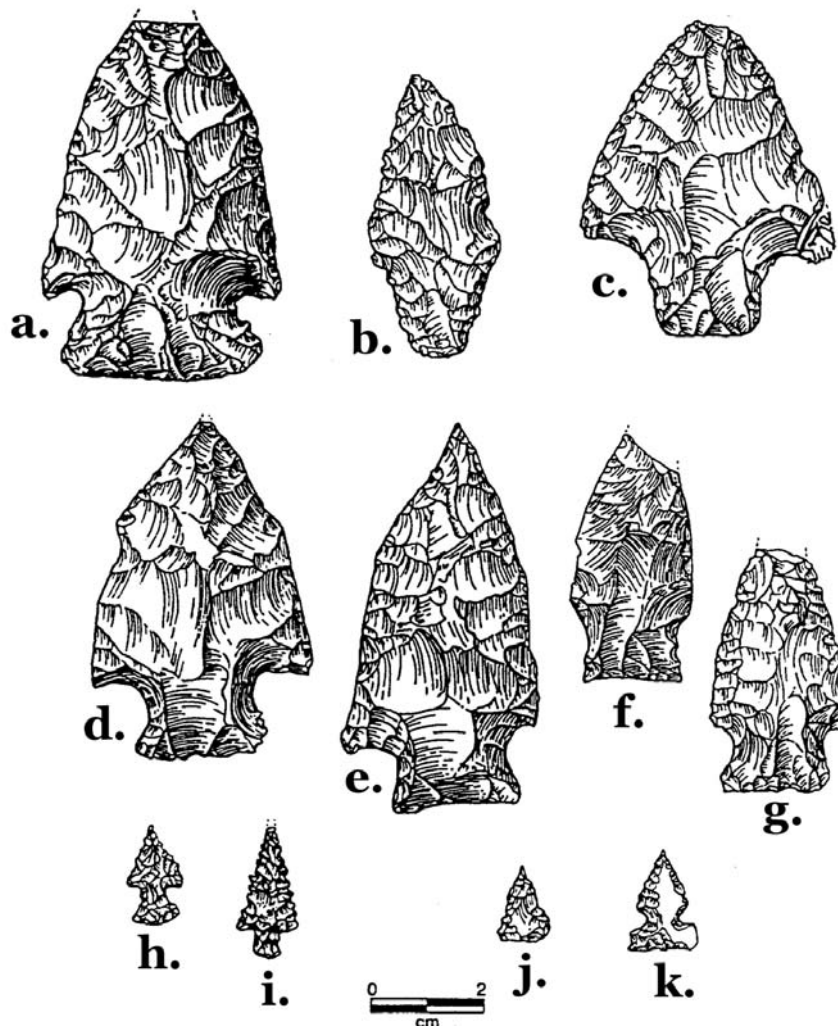
radiocarbon dates from FLW Sites (See Below). This is understandable since archaeological testing at the fort had not yielded any radiocarbon dates assigned to this period prior to 1997 (Kreisa et al. 1996).

Excavations at several stratified cave and rock shelter sites in the region (Verkamp Shelter [Marshall 1965]; Tick Creek Cave [Roberts 1965]; Miller Cave [Fowke 1922; Markman 1993]) produced ample evidence of Late Archaic and Late Woodland habitation, but lacked any evidence of early pottery that could be temporally, stylistically, or technologically linked with established Early Woodland ceramic types such as Alexander, Crab Orchard, Marion Thick, or Black Sand from Illinois (Farnsworth and Emerson 1986). Projectile point types characteristic of the Terminal Archaic or Early Woodland periods in the Illinois and Mississippi River valleys such as Kramer, Belknap, Waubesa, and Gary points [Justice 1987]) were also absent. Gary and Dickson points likely extend into the Middle Woodland Period (O'Brien and Wood 1998). A recent inspection of over 1200 Missouri site file records for the three county (Maries, Phelps, and Pulaski) study area divulged only nine sites with Early Woodland components. For four of these sites, age assignment was based on non-illustrated points or contracting-stem points that may not represent Early Woodland period occupation. Based on this dearth of information, it is not surprising that an Early Woodland occupation of the northern Ozarks was viewed non-existent.

However, since 1997, investigations at FLW have provided direct evidence of projectile points and radiocarbon dates associated with the Early Woodland time period. Excavations at 23PU719 (Albertson Rockshelter—See Above) provided a sample of bone, lithics, ceramics, and mussel shell from a stratified Woodland sequence in bluff base colluvial deposits (Ahler *et al.* 1999). One level from Stratum 4 (1.0-1.1 m below undisturbed ground surface) produced charcoal dated to 2770 ± 70 B.P. (990 [910] 830) B.C. No ceramics or projectile points were associated with this stratum. On the Big Piney River, site 23PU606 consisted of a surface hearth exposed in an eroding bankline about 2.6 meters below ground surface (Ahler and Albertson 1996:84-88). Charcoal, ash, flakes, and fire-cracked rock were associated, but no projectile points were recovered. This feature yielded a radiocarbon assay of 2790 ± 50 B.P. (1000 [960] 840 B.C.).

The best information about Early Woodland artifact assemblages was derived from excavations conducted at 23PU58 (Big Freeman Cave) on the Big Piney River (Ahler et al. 1997). Test Units placed in the dripline and main chamber documented intact strata radiocarbon dated to 2700 ± 80 B.P. (820 [780] 410 B.C.) and 2550 ± 70 B.P. (800 [780] 540 B.C.) respectively. These samples did not contain ceramics. They did however contain bone, mussel shell, lithic artifacts, and a few projectile points. Two hafted bifaces were recovered from the dripline units. One point has a concave base that may represent a variant of McMillan's (1965) category CS2 or Gary point (Reeder 1988:349) (**Figure 2.6**). Similar points were found at 23PU565 (Little Freeman Cave). Other hafted bifaces recovered in the main chamber Test Unit 5, Stratum 6, include a side-notched point—a broad-based point similar to Reeder's (1988) category ES2, and in contexts similar to the radiocarbon sample listed above (**Figure 2.6**). The importance here is that distinctive projectile point styles associated with Early Woodland radiocarbon dates (ca. 800-400 B.C.) are extremely rare in the Gasconade drainage. Based on this new data, a local expression of Early Woodland adaptation has recently been proposed (Kreisa et al. 2000).

In sum, no ceramic artifacts were recovered from these strata, suggesting that the local Early Woodland manifestation is aceramic. However, because the context of recovery in a cave environment may indicate specialized site function, an aceramic characterization of the Early Woodland on FLW in general is tentative. Clearly, archaeological signatures of both Early and Middle Woodland periods are ephemeral and ambiguous in the northern Ozarks. FLW Phase II archaeological investigations indicate that an Early Woodland manifestation is present in the northern Ozarks, but it is distinct from contemporary assemblages in neighboring regions. The aceramic nature of Ozarks Early Woodland and the possibility that some of the projectile point forms found in Early Woodland contexts also have Late Archaic and Middle Woodland origins tends to obscure the issue. However, as stated above, a narrow-hafted side-notched point form may be diagnostic exclusively for the Early Woodland period in our region. Recent examination of drawings and photographs of points in the Missouri site files identified two additional sites containing this point form. This tentatively suggests the archaeological signature of this population



**Figure 2.6:** Selected Early, Middle, and Late Woodland projectile points from FLW, MO: a, Reeder ES2; b, Gary; c, Langtry; d, Snyders; e, Kings Corner-Notched; f-g, Rice Side-Notched; h-j, Scallorn; k, Reed Side-Notched (courtesy Illinois State Museum and University of Illinois at Urbana-Champaign).

has not been adequately defined in contrast to earlier Archaic and later ceramic cultural expressions. Defining assemblage characteristics of the Early Woodland period and differentiating this period from Late Archaic adaptations constitute major culture-historical goals of FLW research.

### 2.3.9 Middle Woodland Period (200 B.C. to A.D. 500)

Similar to the Early Woodland Period, archaeologists have been uncertain as to the occupation of the northern Ozarks during the Middle Woodland period. The few diagnostic Middle Woodland ceramics found hint to ties to the Mississippi River Valley, but the low numbers also suggest that the Northern Ozarks was not part of the Hopewell Interaction Sphere. Chapman (1980) embraced this interpretation proposing that the region was used as a buffer for cultures on the Mississippi River to the east and Plains cultures to the west. Moreover, the region was not close to a Hopewellian center in the lower Illinois Havana Hopewell, Central Mississippi River American Bottom, the Big Bend Missouri Valley sites or so-called Kansas City Hopewell region (Kay 1975; O'Brien and Wood 1998). Coupled with the assumed invisibility of archaeological data from the Early Woodland, it was logical to construct a Northern Ozarks

marginality paradigm for this period. Without the distinctive ceramic styles, moundbuilding or pan-regional exchange indicative of Middle Woodland Hopewell, local Middle Woodland expressions became difficult to identify.

For example, another important characteristic that defines Hopewell and Middle Woodland in the major river valleys is the intensive use of indigenous starchy-oily seed cultigens. In those areas a horticultural base grew from an existing group that included chenopodium, sunflower, marshelder, and cucurbits. Later, maygrass, knotweed, and little barley became increasingly abundant throughout the Middle Woodland period (Asch and Asch 1978, 1985; Edging 1995; Johannessen 1988; O'Brien and Wood 1998; Smith 1992; Watson 1988). In eastern Missouri located near the confluence of the Cuivre and the Mississippi Rivers, botanical evidence from the Burkemper site is comparable to the ubiquity of starchy seeds in Middle Woodland features from the lower Illinois and central Mississippi River valleys (O'Brien and Wood 1998:212). In contrast at FLW, the analysis of numerous flotations reveals that starchy seeds like goosefoot and maygrass are present, but in very low numbers.

Likewise, although Hopewell or Hopewellian-like ceramics are rare in the Gasconade, they are abundant at eastern Missouri sites such as Burkemper, Creve Coeur, La Plant, and 23MA3 (O'Brien and Lyman 1996; O'Brien and Wood 1998). The Burkemper Site mentioned above contains a large majority of Havana Hopewell pottery types. Due north of FLW in Callaway County, Havana-like pottery such as Neteler and Naples Stamped are similar to those in the lower Illinois Valley. At FLW, sand-tempered dentate-stamped sherds with a row of small punctuations have been recovered from 23PU2 (Miller Cave) and 23PU265 (Ahler et al. 1995a; Markman 1993; Niquette 1983). Thin grit-tempered pottery similar to Middle Woodland incised and plain wares from other parts of the Midwest have also been identified in low frequencies at 23PU719 (Albertson Rockshelter) and 23PU17. Pottery from 23PU719, associated with a Middle Woodland radiocarbon date, has affinities with the Baytown Plain-Mulberry Creek Cordmarked complex of the Lower Mississippi River valley (Ahler et al. 1999). Other artifact signatures that have been traditionally used as markers of Middle Woodland include Snyders corner-notched

projectile points and small lamellar blades. It is unclear however, whether other Middle Woodland cultural patterns common in the Midwest (use of tropical and indigenous cultigens, two-level settlement hierarchy, social differentiation in mortuary practices and exchange) are expressed in any Ozark Middle Woodland period manifestation. More research is needed to define a local Middle Woodland cultural manifestation and its degree of participation in pan-regional cultural systems.

If Middle Woodland cultigens and pottery are present but to a limited extent in the northern Ozarks, a firmer basis for recognizing this period is the suite of projectile points and radiocarbon assays (Ahler et al. 1995, 1997, 1998; Kreisa et al. 1996; Kreisa et al 2000; Reeder 1988). Reeder (1988:196) has stressed that although a Middle Woodland ceramic expression is elusive, lithic artifacts are abundant. Point types such as Snyders, Gary, Steuben, Manker, Ansell, and Kings Corner-Notched are well represented in the Gasconade drainage (**Figure 2.6**). And although mainly reported from caves and rockshelters, a few open sites such as Feeler have a clear aceramic component between Late Archaic and Late Woodland strata. Similar components, identified at Tick Creek Cave and Williams Shelter, have supported this characterization of northern Ozarks Middle Woodland occupations. These and other sites led Reeder (1988) to propose a Middle Woodland Spring Creek Complex. It is likely that the Spring Creek complex extended across much of the Gasconade drainage during the initial four centuries A.D.

With regard to radiocarbon dates, recent Phase II excavations at FLW have produced seven sites with Middle Woodland-age components in dated stratigraphic contexts. On the Big Piney River, 23PU235 (Sadies Cave) and 23PU567 (Farview Shelter) yielded strata that date between about 1,600 and 1800 years ago (Ahler et al. 1995; Neverett and Ahler 1997). At 23PU235 (Sadies Cave), a cave in the Miller Complex, a contracting-stem Gary point was recovered from Stratum 1, Level 2. A radiocarbon assay of  $1670 \pm 70$  B.P. (A.D. 260 [410] 440) from the same level supports a Middle Woodland age assessment for this specimen; however, in many areas of the Mississippi River Valley this point type extends back into the Early Woodland Period (O'Brien and Wood 1998:172-174). Environmental data obtained from terrestrial gastropods in the upper late Holocene sediments indicate an amelioration of environmental

conditions and a return to a more mesic woodland vegetation community (Ahler et al. 1995:285-286). Faunal exploitation patterns remained similar through time with some subtle trends. Reptile and amphibian use appears to increase during the Middle Archaic and then declines during the Middle-Late Woodland. Mammal use appears to increase in the Middle-Late Woodland Period. The botanical remains from 23PU235 (Sadies Cave) show little change through time. Hickory nuts dominate the nutshell assemblage in all strata sets. Archaeobotanical remains also reflect an increase in site density and use. Detailed analyses of lithic debitage and modified items suggest that the site's overall function changed from short-term habitation in the Middle-Late Archaic to a specialized field camp in the Middle-Late Woodland.

Located 0.75 km north of the Miller Complex, 23PU567 (Farview Shelter) is one of seven sites within the Ramsey Complex. Stratum 3, Feature 2 produced wood charcoal that was radiocarbon dated to  $1720 \pm 70$  B.P. (A.D. 240 [340] 420). Included in the feature was a King's Corner Notched Point (**Figure 2.6**). Given the nature of the deposits it is likely that this site was a resource extraction site associated with the larger caves to the east and west (Big and Little Freeman Caves). Mussel shell, wood and nut charcoal, and lithic debris constitute the majority of artifacts recovered. The relative lack of formal tools and late stage maintenance of stone tools suggests that a full range of domestic activities is not represented. Clearly, the most significant aspect of data recovered from this site is the presence of Middle Woodland points in dated contexts.

On Roubidoux Creek, Middle Woodland dated contexts occur at 23PU209 (Saltpeter Cave), 23PU211 (Davis Cave 1), 23PU249 (Renoir Cave), 23PU265, and 23PU264 (Red Oak Shelter). Site 23PU209 (Saltpeter Cave) is one of several sites in the Dondas Cluster that may contain three well-defined site complexes (Ahler et al. 1998). A charcoal sample from the lowest level in Stratum 5 produced an assay of  $2020 \pm 70$  B.P. (95 [21] B.C. A.D. 75) (Ahler et al. 1998). A Gary point was recovered and although this point has a long history of manufacture, its location in a Middle Woodland stratum is within the range of the point type and the assay obtained from 23PU235 (Sadies Cave). In addition, a Kings Corner-notched point was recovered from Stratum 5, a point type that is found in Middle Woodland and early Late Woodland contexts. Collectively, the artifacts, features, and point types support the interpretation that Stratum 5 is a Middle early Late Woodland occupation. The cave site 23PU211 (Davis Cave 1) is located approximately 210 m NE of 23PU209 (Saltpeter Cave) and is also part of the Dondas Cluster. A carbon sample extracted from Stratum 3, Level 6, produced a date of  $1600 \pm 70$  B.P. (A.D. 396 [430] 540) which places it on the Middle Woodland period similar to the date recorded for 23PU235 (Sadies Cave).

Site 23PU249 (Renoir Cave) is located downstream on Roubidoux Creek approximately 4 km from the Dondas Cluster. It is likely that the cave is part of a site complex comprised of eleven sites. Radiocarbon samples taken from Feature 3, an ash lense produced an assay of  $2100 \pm 160$  B.P. (370 [100] B.C. A.D. 75). Stratum 5, Level 6 produced a date of  $2160 \pm 60$  B.P. (350 [185] 100 B.C.) in the same unit clearly supports a Middle Woodland occupation at the site that is coeval with other sites on the installation. Although no diagnostic artifacts (Snyders and Kings Corner-notched points, zoned/stamped pottery, or lamellar blades) were found, the recovery of charcoal from a feature, bone and other artifacts indicates that the site was used as a series of short-term occupations.

Site 23PU265 is a small cave site located due north of Renoir Cave across Roubidoux Creek. The site is unique among cave sites at FLW due to the lack of vandalism. Based upon surface material that included a coarse-tempered dentate-stamped potsherd, it was felt that this site offered a unique opportunity to investigate a possible Middle Woodland occupation. Two radiocarbon assays recovered from Feature 3, Stratum 2/3 boundary and Stratum 3/4, boundary produced dates of  $1810 \pm 60$  B.P. (A.D. 135 [235] 320) and  $1770 \pm 120$  B.P. (A.D. 120 [250] 415). Initial inspection of a straight-stemmed point (similar to Reeder's SS3 and McMillan's SS5 points) yielded a Lowe projectile point that dates to A.D. 300-500 in parts of the central Midwest (O'Brien and Wood 1998:180). The investigations at 23PU265 revealed a stratified sequence of cultural deposits in four distinct strata spanning the Middle and Late Woodland Periods. Based upon lithic, bone, shell and density analysis, it appears that the function of the site changed from use as a specialized extraction/processing site in the early Middle Woodland to generalized

habitation in the Middle Woodland to a specialized plant resource extraction site in the Late Woodland Period.

Site 23PU264 (Red Oak Shelter) is located 300 m east of 23PU265. This site contains significant archaeological deposits that date to the Early Archaic and Woodland periods (See Archaic Period above). A radiocarbon assay obtained from a Level 8 hearth feature yielded a date of 2140 ± 50 B.P. (330 [180] 100 B.C.). No ceramics or projectile points were found in the excavation levels; however, a Middle Woodland Snyder's point was found on the surface adjacent to the site. The recovery of mussel shell, lithic, faunal and floral material suggests short-term occupations by peoples engaged in a variety of tool-making, hunting, processing and extraction activities.

The recovery of ceramic types such as dentate-stamped and thin grit-tempered pottery and projectile point types such as Snyder's or Kings Corner-Notched recovered in dated contexts from 1600 to 2100 years ago clearly supports a Middle Woodland occupation for FLW and this portion of the northern Ozarks.

Defining a local Middle Woodland phase is a work in progress (Ahler et al. 1999; Ahler et al. in progress; Kreisa et al. 2000) however since Middle Woodland Hopewell characteristics such as moundbuilding, the intensive use of cultigens, and pan-regional exchange are absent. Nevertheless, our data tentatively supports Reeder's (1988) proposed Spring Creek Complex, although this should be tempered with the knowledge that a few Middle Woodland sites contain ceramics.

### **2.3.10 Late Woodland and Mississippian Period (A.D. 500-1500)**

Some Middle Woodland manifestations persist past A.D. 500; however, the elaborate Hopewell exchange declined, as did the large Hopewell centers in Ohio and Illinois. Although one could classify the Late Woodland period as a time of insularity or reorganization, it hardly deserves the label "cultural decline" popular three decades ago. It is true that most of the Hopewell centers did decline with a de-emphasis on elaborate burial goods and pottery; however, in many parts of the Midwest the Late Woodland Period represents a period of population increase. The reasons for this shift are unknown, some ancient exchange networks continued to function such as the north-south movement of shell and copper. Burial patterns show a gradual change to large group cemeteries and small burial mounds with few burial items. Aspects of Late Woodland cultural adaptation played an increasingly important role in the development of Late Prehistoric societies that, in many areas of the Eastern Woodlands, persisted into the Historic Period. These included large permanent villages, agriculture, and exterior cord-marked thin conoidal ceramics. It is also clear that the emphasis on riverine resources and riverine-based mortuary centers shifted to a more wide-ranging settlement and subsistence pattern. Late Woodland sites are found in every micro-environmental zone indicative of exploitation of a broader range of resources. Added to this pattern is the intensification of a horticultural base (the use of starchy seeds showed a marked increase in this period) and, by the end of the Late Woodland Period, the introduction of maize agriculture (Edging 1995; Ford 1985; Riley et al. 1990; Schroeder 1999; Smith 1992; Watson 1988). Instead of decline, the Late Woodland period is now understood as a long period of reorganization and growth.

Many researchers now propose that improvements in horticulture gave individual households and communities' greater independence in subsistence, thus reducing opportunities for political and social power (Muller 1986). Still others have cited increased population as causal for competition and conflict resulting in the decline of intra-community hierarchies and exchange networks (Braun 1987). All of these factors had major effects on the development of Late Woodland societies. Regardless, by A.D. 900 in the major river valleys, a new cycle was set in motion. Centralization and production controlled by lineage groups in the Mississippi and Southeast regions probably related to the commitment to and success of maize agriculture by populations that had already adapted to sedentism and diverse floodplain environments (Baden 1987; Edging 1995; Johannessen 1988; Milner 1998; Schroeder 1999; Smith 1992).

The Late Woodland period is followed by a period of cultural and social complexity known as Mississippian or Late Prehistoric Period. Regional cultures emerged including Middle Mississippian in Mississippi, Ohio, and Tennessee River Valleys, Fort Ancient in Ohio, Oneota in the Upper Plains and

Midwest, the Caddoan in Oklahoma, Texas, and Arkansas, the South Appalachian Mississippian in Georgia, north Florida and the Carolinas, and Plaquemine Mississippian located along the lower Mississippi River. The Mississippian period is marked by technological changes (shell-tempered pottery in a diverse vessel set) and changes in social integration and complexity (hierarchical settlement systems, large town-and-mound complexes; elite burial ceremonialism; and commitment to intensive maize agriculture). Excluding the use of maize, the Gasconade drainage did not embrace any of these general characteristics. Instead, the Late Woodland Maramec Spring culture continues, with the addition of a few elements indicative of limited interaction with Mississippian peoples. These elements include occasional shell-tempered pottery, rare incising or punctuation on ceramic vessels and rare exotic marine shell artifacts. It is clear that the Gasconade drainage represents a continuation of Late Woodland cultural adaptations rather than any process of Mississippianization or manifestation of an emerging Mississippian culture. The degree of local interaction and participation in the larger Mississippian cultural system is a crucial research issue considered at FLW. No sites dating to after AD 1450 have been found on the installation, and terminal prehistoric and protohistoric expressions remain essentially unknown.

Descriptions and summaries in this temporal period, the last and most intensive at FLW, are largely based on Kreisa et al. (2000). The Late Woodland culture is well expressed in the Midwest and in the Gasconade drainage. Locally, Late Woodland sites are denoted by the presence of cordmarked or plain dolomite-tempered ceramics dominated by jar forms. Diagnostic Late Woodland lithic artifacts include Kings corner-notched, Gary/Langtry contracting stem, Rice side-notched and Scallorn points in the early part of the period and a variety of Scallorn and small arrow points in the later part of the period (**Figure 2.6**). In addition, there appears to be some degree of social differentiation expressed in mortuary programs—some individuals are interred in rock cairns, usually located on upland prominences overlooking broad stream valleys. The local Late Woodland manifestation is the Maramec Spring Focus (Marshall 1958, 1965), which was subsequently renamed as the Maramec Spring Phase and subdivided into early (A.D. 500-900) and late (A.D. 900-1500) phases by Reeder (1988).

Over the last 50 years, four individuals, Carl Chapman, Richard Marshall, R. Bruce McMillan, and Robert Reeder, have largely been responsible for the definition of Late Woodland in the northern Ozarks (Kreisa et al. 2000; Yelton and Edging 2000). Initially, Chapman (1948, 1980) defined the Highland Aspect of the Woodland Tradition based on Fowke (1922), Fenenga (1938), and his own research, and identified grit-tempered pottery as characteristic. A decade later Marshall (1963, 1965, 1966) revised the Highland Aspect based on excavations at a number of sites along the Bourbeuse and Maramec rivers. Excavations at rockshelter, mound, and open-air “refuse areas” were used to define the Maramec Spring phase. Maramec Cordmarked and Plain ceramics characterized this phase, although small amounts of quartzite, chert, sand, and fired-clay tempered ceramics were present. Using associated projectile points included Scallorn, Crisp Ovate, Rice Side-Notched, and King’s Corner-Notched, McMillan (1963:115–119) expanded the phase geographically into the Gasconade River drainage and elaborated on the traits of associated material culture.

Reeder (1988:204) later redefined the Maramec Spring phase as distinctive and recognizable due to the widespread presence of pottery, but at the same time ambiguous because of the problem of mixture of deposits at investigated sites. From a review of excavations, Reeder (1988:206, 208) identified an early Maramec Spring phase associated with only Late Woodland material culture and a late Maramec Spring phase associated with low frequencies of Mississippian material culture. The introduction of Mississippian material culture appeared to occur sometime during the 10th century A.D., although only six Late Woodland radiocarbon dates from four sites in the northern Ozarks were available to Reeder at that time. More recently, Reeder (1999) provides a detailed discussion of the history, geographical extent, components, material culture, and chronology of this phase, although no longer does he divide it into early and late subphases.

Maramec Spring Phase settlement patterns include extensive villages in both valley and upland ridge crest settings, smaller hamlets and extractive camps, and extensive use of caves and rock shelters, probably for a variety of specialized activities. Maramec Spring occupations (either early or late) have been identified

on at least 37 sites on FLW (Adams 1997; Ahler and McDowell 1993; Kreisa 1999; Kreisa *et al.* 1996b, 2000; Markman and Baumann 1993; McGowan 1996; McGowan *et al.* 1996; Moffat *et al.* 1989; Niquette 1984; Niquette *et al.* 1983). Phase II testing have been conducted at 20 sites that contain dated Late Woodland components (Ahler *et al.* 1995a, 1996; Childress and Weaver 1998; Kreisa 1995; Kreisa *et al.* 1996a; Kreisa *et al.* 2000b). These include 23PU416, 23PU492, 23PU172, 23PU248, 23PU249, 23PU265 (Ahler *et al.* 1995a-b; Kreisa 1995), 23PU421 (Kreisa *et al.* 1996), 23PU58 (Ahler *et al.* 1997; Kreisa *et al.* 1996), 23PU565, 23PU567 (Ahler *et al.* 1996, 1997), 23PU264, 23PU354, 458 (Childress and Weaver 1998), 23PU209, 23PU210, 23PU211 (Ahler *et al.* 1998), 23PU614, 23PU719 (Ahler *et al.* 1999), 23PU731 and 23PU739 (Kreisa *et al.* 2000). One of the more interesting results of the FLW Cultural Resource Management Program has been the identification of several Late Woodland site complexes—sets of spatially, temporally, and functionally related sites. Three such complexes (Miller, Ramsey, and Lohruff) have been identified so far on the installation, however, more are probably present but have not been investigated in sufficient detail to warrant formal identification and naming (Edging and Ahler 2000). Due to the large number of dated components at FLW, only a portion of the sites listed above will be described. Emphasis will be placed on those sites that occur within site complexes although a few sites such as 23PU421 and 23PU614 require mention due to significance of the material remains recovered from the site.

### 2.3.11 Early Maramec Spring Subphase (A.D. 500–900)

Early Maramec Spring components have been defined as having only Late Woodland material culture (Reeder 1988:208). While recent investigations at FLW have found this to be true, a few instances of chronologically early components with minimal Mississippian traits have been discovered. The basal figure of A.D. 500 for the beginning of the Maramec Spring phase is based on the co-occurrence of Maramec ceramics with King's Corner-Notched and Rice Side-Notched projectile points as identified in an Archaeological Survey of Missouri site file review (Kreisa *et al.* 2000). Ten different, securely dated early Maramec Spring components have been excavated at FLW; nine at enclosed sites and one from a cairn. Twelve radiocarbon dates from these ten sites document a continuity of occupation throughout the early subphase (Kreisa *et al.* 2000).

Projectile points from early Maramec Spring components at FLW sites include King's Corner-Notched, Rice Side-Notched, Gary Contracting Stemmed, Langtry, triangular, Scallorn, Klunk Side-Notched, Koster Side-Notched, Lowe Flared Base, Cupp, and unidentified flake points (**Figure 2.6**). Of the 80 total projectile points from early Maramec Spring assemblages, exactly one-half are small arrow points and one-half are larger side-notched, corner notched, or stemmed forms. Most numerous, both in terms of presence are Rice Side-Notched points. Scallorn and triangular points are the next most common. Kings Corner Notched points are also common.

At FLW, Maramec Plain and Cordmarked ceramics dominate early Maramec Spring components, although a few non-dolomite-tempered ceramics are present (Kreisa *et al.* 2000b). The Maramec series ceramics are either plain or cordmarked jars. Only single examples of incised and knot-fabric impressed Maramec sherds have been found. Other temper types include grog, grit, sand, and shell. The former three tempers are minor components of assemblages, having been found at a single site each. Shell-tempering, a hallmark of the Mississippian time period and culture in the Mississippi River valley to the east, has been found at three early Maramec Spring sites at FLW. The cultural origin of shell-tempered sherds in the northern Ozarks is presently unknown. The presence of shell-tempered bowl forms, highly unusual for the Maramec series, might suggest their importation into the northern Ozarks. In contrast, ceramics with mixed shell- and dolomite-temper at 23PU235 (Sadies Cave) suggest local manufacture (Ahler *et al.* 1995b).

The presence and degree of preservation of subsistence-related data, both botanical and faunal, varies widely among sites on FLW (Kreisa *et al.* 1996). Most ubiquitous within botanical assemblages are nuts, including walnut, hickory, and acorn (Asch 1999). Starchy seeds, such as chenopodium, amaranth, and knotweed, are present, but in small numbers, and tropical cultigens, maize and cucurbits, are also present

but in small amounts. Maize is present in three of nine assemblages, while cucurbits in only one of nine assemblages. Of the three assemblages with maize, only one to three kernel fragments have been recovered at each site. Faunal assemblages, when of a large size, exhibit a great diversity of species. Mammal remains tend to dominate, but surprisingly large and diverse fish and bird assemblages are present at select sites. Not surprisingly, white-tailed deer appear to have provided a substantial portion of the meat available to the region's inhabitants.

### **2.3.12 Late Maramec Spring Subphase (A.D. 900-1500)**

Reeder (1988:208) defined the Late Maramec Spring subphase as an essentially Late Woodland manifestation with added Mississippian traits, with the division between the two subphases (after A.D. 900) (Reeder 1988:208). Evidence from FLW components indicates this to be true, with the consideration that the initial 100 years may represent an admixture of early and late subphase attributes. Ten radiocarbon assays from eight different sites date the late subphase in the FLW area (Kreisa et al. 1999). Six of these date to the initial three centuries (A.D. 900–1200) while four date from the 14th through mid-15th centuries (A.D. 1300–1450). Dates attributed to the 13th century are lacking, but this is thought to represent a matter of sampling rather than a lack of occupation. This suite of radiocarbon dates suggests a continuous and late occupation of the northern Ozarks.

Projectile point forms after A.D. 1000 at FLW components consist of arrow points, such as Scallorn, Reed Side-Notched, triangular, and unidentified flake points, although a few Rice Side-Notched and Kings Side-Notched points are present (Kreisa et al. 2000) (**Figure 2.6**). In three assemblages dating to the initial century of the late subphase, Rice Side-Notched and Kings Corner-Notched forms comprise 75 percent of the projectile points found. After approximately A.D. 1000, 86 percent of the projectile points found are small arrow forms, such as Scallorn and unidentified flake points. The data also indicate an apparent decrease in the variety of point types between the early and late subphases.

Shell-tempered sherds are present at six of ten late FLW components, although Maramec series sherds continue to dominate all assemblages. Shell-tempered sherds are present on the surface and in disturbed contexts at one of the other four sites, while the final three have small (less than 50 sherds) assemblages. This suggests that shell-tempered sherds are ubiquitous in large late subphase assemblages. Similar to the earlier portion of the Maramec Spring subphase, most vessels, whether Maramec series or shell-tempered, are plain or cordmarked jars. Other forms identified include a shell-tempered bowl and a possible pan or plate fragment (Ahler et al. 1998). Surfaces are predominantly plain or cordmarked, although occasional knot or fabric impressed, incised, and red-slipped sherds are present. Punctuated sherds have also been found in disturbed contexts. More interestingly perhaps, is the Oneota-related angled flaring globular jar rim found in deposits dating to ca. A.D. 1365 at 23PU719 (Albertson Rockshelter) (Ahler et al. 1999). While it may not be prudent to infer too much from one sherd, its late occurrence and possible association with Oneota cultures suggests at the least that Gasconade populations had some contact with more northerly populations, which may have been proto-Missouri.

Subsistence remains associated with the late subphase FLW components are remarkably similar to those discussed above for the early subphase components, perhaps due to the similarity of preservation and site-use constraints (most assemblages are from caves and rock shelters). Nuts are the most prevalent botanical subsistence item, while seeds, maize, and cucurbits are present (Asch 1999; Schroeder 1997). Maize was found at three of ten assemblages while cucurbits were found at two of ten components. No more than four maize fragments have been found in the dated late components at any single site. Interestingly, no beans, common in some late prehistoric cultures (Edging 1995; Rossen and Edging 1987), have been found at late subphase sites. Also similar to the early subphase, larger faunal assemblages exhibit a diversity of species with mammals dominant.

Perhaps the most archaeologically impressive but poorly understood Late Woodland site type at FLW is the large, multi-season village. Although such villages, Feeler (Reeder 1982, 1988, 1999), Dead Deer (Reeder 1999), Kimberlin (Geier 1975), and Pippen (McMillan 1965), have been excavated in close



proximity to the installation (Kreisa et al. 2000), no similar sites have been discovered at FLW. Sites (23PU3 and 23PU4), located on private land below 23PU2 (Miller Cave), have not been investigated. To address this deficiency, a project has recently been initiated that will explore alluvial sites (Ahler et al. 2000). Known as the Stratified Sites Project (SSP), the project is designed to locate tracts within FLW that are likely to contain sites with deep, stratified cultural deposits with an occupational history that spans a significant portion of the Holocene epoch. Existing GIS data layers (such as soil-geomorphic alloformation, soil series, stream type, and archaeological site locations) were compiled prior to field searches for specific locations that tested the GIS coverage maps.

Coincident with the increase in Late Woodland sites in the northern Ozarks is what appears to be a substantial reorganization of settlement with at least two major changes from earlier settlement patterns. First, large village sites with numerous pit features are present during the Late Woodland period. Second, Late Woodland settlement system consisting of cairns, petroglyphs, caves and rockshelters, and smaller open-air sites appear to have been organized into coherent complexes. As stated above, three distinctive complexes have been defined; however, it is likely that several more exist especially within the Dondas Cluster consisting of over 100 archaeological sites (Ahler et al. 1998).

While large alluvial sites have been lacking at FLW, archaeological investigations has substantiated the site complex as a distinctive Late Woodland settlement pattern. And while archaeological research demonstrates that earlier Woodland and even Archaic Period cultures are represented in these site complexes, the Late Woodland Period has the most diversity of site types, with rock cairns and petroglyphs added during this period (Edging 2000; Edging and Ahler 2000; Ahler and Edging 2001). Site complexes are defined as sites in close proximity to one another that have at least three of five known site types (cave, rockshelter, bluffcrest, cairn, and terrace base camp) and at least one temporal component in common (Ahler et al. 1997). Three of the intensively investigated site complexes, Miller, Ramsey, and Lohraff, share many structural similarities. All are organized around large upland peninsulas adjacent to major streams that dominate the local landscape, towering 45 to 60 m above broad terrace and floodplain formations. And all of these complexes include cairn, petroglyph, caves and rock shelters, and smaller open-air specialized function encampments. Large village and base campsites are assumed to be associated with these complexes.

The Miller complex is located along the Big Piney River (Ahler et al. 1995; Ahler and Edging 2001; Kreisa et al. 2000). Comprised of two cave sites, a bluff top camp, cairns, and a petroglyph site, the Miller Complex suggests that a wide range of activities were conducted through time (Ahler et al. 1995a, b). Although 23PU2 (Miller Cave) (See Figure 2.4) has been greatly impacted by looting, investigations in the 1920s and 1990s provide evidence of site use as a specialized mortuary and ritual location in the Archaic and a more generalized habitation site in the Late Woodland. Excavations and coring in the 1990s has shown that intact deposits exist, although most of the upper strata containing Late Woodland occupations are gone. Projectile points and ceramics recovered from over a meter of disturbed deposits suggest that a substantial Late Woodland occupation did exist at one time. In contrast, excavations from intact deposits at 23PU235 (Sadies Cave) produced a generalized faunal and floral assemblage and a specialized tool assemblage. Radiocarbon assays that chronicle the Late Woodland occupation of the site were found in units at the front and back of the twilight zone. In Unit 4/5 at the mouth of Sadies Cave, three radiocarbon dates span the Early and Late Maramec Springs Phase. Early Late Maramec Springs occupations are represented by dates in Stratum 2A, Level 3 and Stratum 2B, Feature 8, that produced dates of  $1460 \pm 50$  B.P. (A.D. 575 [620] 650) and  $1430 \pm 50$  B.P. (A.D. 605 [640] 660). One Maramec Plain sherd was found in Stratum 2A.

A Late Maramec Springs Phase component is represented in Unit 4/5 Stratum 1, Level 1 with a date of  $950 \pm 60$  B.P. (A.D. 1020 [1040] 1175) and ceramics. Towards the back of the twilight zone, Unit 7, Stratum 1, Level 1, contained ceramics and a almost identical date of  $950 \pm 70$  B.P. (A.D. 1015 [1040] 1180). Although plain and cordmarked surface ware dominate the ceramic assemblage, a few cord-impressed or knotted and fabric-marked sherds were found in both units. Surface treatments including red slipping and tempering such as shell and dolomite were found and seem to be signatures of the Late

Maramec Springs phase. It also appears that the basic vessel set that included mostly jars in Early Maramec Springs does include bowls and pans in late subperiod. The presence of these types and forms are common in both the Mississippi and Caddoan region during the latter part of Late Woodland Period (Brown 1984; Edging 1995; Kreisa 1990; Reeder 1988). A Rice Side-Notched and Reed Side Notched Points were recovered in Stratum 1, Units 2 and 3 further supporting the Late Maramec Springs affiliation.

Late Woodland cultural material was recovered in all test units except Unit 1, located in the back of the cave. Analysis of lithic, faunal, shell, and plant remains indicate that the site functioned as a specialized field camp associated with a more intensive habitation site at Miller Cave and the probable alluvial sites located below these sites. There is a reliance on gathered plants such as nuts and small seed plants but no maize was found in the flotation samples. Sadies Cave does represent part of a dynamic settlement system that changed from a residentially mobile system to organizing sites around long-term base camps. During the Late Woodland Period neither Miller nor Sadies Caves appear to have functioned as base camps; long-term occupation probably took place in valley floodplain settings.

Site 23PU254, a cairn located on the bluff crest above 23PU235 (Sadies Cave), represents a specialized Late Woodland mortuary site that is unique to the Late Woodland Period. Prehistoric rock mounds or cairns have been excavated in the northern and western Ozarks in previous decades; however, due to the presence of human remains only the recordation of sites during Phase I survey has been conducted at FLW since 1991 (Adams 1997; Adams and Kreisa 1999; Ahler and McDowell 1993; Ahler et al. 1999; Chapman 1980:94; Edging and Kreisa 1996; McGowan 1996; Kreisa et al. 1996; Niquette 1983; Wood 1992). Thirty-three cairns have been recorded on FLW. They occur singly or in clusters and are located almost exclusively on bluffs and ridge spurs overlooking perennial streams (Ahler and Albertson 1996; Niquette 1986:19).

In the early 1980s, Niquette excavated portions of 11 cairns across the installation. A calibrated radiocarbon date of A.D. 660 [790] 860 recovered from 23PU313 represents the first and only radiocarbon date obtained from excavations at FLW prior to 1992 (Niquette 1984; Edging 2000). Niquette's (1984) investigations revealed mortuary practices similar to other rock mounds in Missouri. Remains of individuals were placed on bedrock and then stones and earth were piled up to form a mound. It is also probable, based on investigations at several site complexes, that the function of the cairn is also embedded in the ritual and settlement structure of Late Woodland peoples (O'Brien and Wood 1998:263; Yelton and Edging 2000). For example, Niquette (1986) proposed that there is some variability among grave assemblages, burial types, and internal structures. Primary inhumations, such as extended or flexed burials, are absent. Niquette (et al. 1983; 1986) determined that the majority of cairns had fragmentary skeletal material and or bundle burials, and few, if any grave goods. While the function of rock cairns has been viewed as burial places, the recovery of only secondary burials suggests that the cairn is only one portion of a mortuary process (Niquette 1986:18). This is in keeping with Hall's (1997) thesis that secondary burials such as bundle burials represent a long process of mourning that binds the community together through time. Cairns may have served as a focal point for religious and social ceremonies in addition to being mortuary sites. Niquette's (1984) discovery of site 23PU221 that includes seven cairns aligned with due north suggests that these sites may have also functioned as solstice and/or lineage markers. Diagnostics recovered from Niquette's excavations include Late Woodland Scallorn and Crisp projectile points and Maramec Spring plain ceramics. Although one sherd recovered from 23PU221 was identified as a portion of a Mississippian water bottle (Henderson 1983), the preponderance of evidence since the early 1980s clearly indicates that Mississippian and Oneota influences appear to be ephemeral (Ahler et al. 1999; Edging 2000; Kreisa et al. 1999; Wettstaed 1996).

Recent investigations at site 23PU288, located on the bluff top above Miller Cave revealed that Archaic, and Middle and Late Woodland occupations are present. Activities at this site appear to focus on tool maintenance and nut processing through time. All of the site complexes investigated to date, contain large diffuse sites such as 23PU288 on the bluff top above the caves and rockshelters. Finally, site 23PU255 (Miller Petroglyphs), once thought to be unique at FLW, is now one of several rock art locations on the

Big Piney River and Roubidoux Creek. Besides striking similarities of a particular motif related to fertility, all of the rock art locations are significant elements in a coherent Late Woodland site complex (See Lohraff Rock Art Discussion Below).

Located on the Big Piney River just north of the Miller Complex, the Ramsey Cave Complex consists of seven sites (Ahler et al. 1997; Ahler and Edging 2001). Site 23PU554 (Ramsey Base Camp) appears to contain predominately Archaic materials. The site functioned as a tool maintenance and nut-processing site at least during the late Middle Archaic and perhaps throughout the subsequent Late Archaic. Site 23PU58 (Big Freeman Cave), 23PU565 (Little Freeman Cave), 23PU567 (Farview Shelter) and 23PU568 (Ramsey Cave) comprise part of the Ramsey Complex that contain Late Woodland cultural remains. At site 23PU58 (Big Freeman Cave), numerous Scallorn and other Late Woodland projectile points were recovered from disturbed contexts, however, two radiocarbon charcoal samples were obtained from an intact Stratum 2, Level 6 that produced a date of  $1300 \pm 90$  B.P. (A.D. 660 [690] 860) and  $1500 \pm 80$  B.P. (A.D. 440 [575] 640) from Stratum 2, Level 7. Maramec Plain and Cordmarked recovered with the dates have a fine dolomite temper. No shell-tempered ceramics were recovered. This component also contained abundant lithic tools and debitage, as well as faunal and botanical remains. Use of the site is somewhat different than other Late Woodland Period cave occupations in that the general domestic habitation appears to be more intensive than the relatively specialized nature of other sites.

At 23PU565 (Little Freeman Cave) several late Late Woodland projectile points were recovered from disturbed contexts. These include Scallorn and Rice Side-notched points. Hafted bifaces from intact deposits also include Late Woodland points. A Rice Side-notched point, ceramics and a radiocarbon assay collected from Test Unit 2, Stratum 1/2 Feature 1 boundary document a Late Woodland occupation at the site. The radiocarbon sample yielded a date of  $1080 \pm 70$  B.P. (A.D. 890 [980] 1020). The ceramic assemblage within Stratum 1 appears to be typical of early Late Woodland occupations. Maramec Cordmarked and Maramec Plain types comprised 85% of the entire assemblage. The majority of tempers are the finely crushed limestone (dolomite) temper and a typical vessel set of small and medium jars. Variations in temper include minor amounts of sherds with chert, shell or shell-combination, rounded sand, or crushed igneous/metamorphic rock as tempering agents. Presence of shell and shell-combination tempering indicates that the site was used at least once during the late Late Woodland period. The Late Woodland component is also represented by moderate amounts of lithic debitage, plant, animal and mussel material. Botanical remains indicated substantial but variable use of nuts and native seed plants. Maize is present in small amounts. Faunal remains indicate the site was used as a short-term seasonal occupation especially between late fall and early spring. Collectively, subsistence remains suggest that the site was used periodically as a locus of a generalized short-term habitation.

Besides containing a dated Middle Woodland component, site 23PU567 (Farview Shelter) also contains evidence of an early Late Woodland occupation. A Rice Side-notched point was recovered from the Stratum 1/2 boundary in Test Unit 1. Stratum 2, Level 10 produced charcoal that was radiocarbon dated to  $1460 \pm 70$  B.P. (A.D. 550 [620] 660). Another Rice Side-notched point was recovered from Stratum 1, Feature 3, in Test Unit 3. The low density of material recovered at 23PU567 suggests that this site was the location of a series of very short-term special-purpose activities. Although mussel shell, wood and nut charcoal and lithic debris were recovered in all levels, the paucity of animal bone suggests that the site was not used for animal processing or hunting. The site can best be described as a plant processing location.

Site 23PU568 (Ramsey Cave) is a small cave site just east of 23PU58 (Big Freeman Cave). Although this site was not investigated as part of the Ramsey Complex due to funding, its proximity within the complex suggests it served as a habitation and special-purpose site. Some lithic artifacts were recovered on surface and it appears that intact deposits may exist under the rock overhang outside the cave. On the east side of the site under the overhang are a group of rock slabs. Pecked into the surface on the easternmost rock is the bisected oval glyph identical to the Miller and Lohraff glyphs. The cave itself is blocked by a cone of Pleistocene-age clays that have washed down and out the cave. Preliminary coring by the Illinois State Museum in 1995 revealed the presence of Pleistocene-age fauna. These findings, and the overall

significance of biological and archaeological resources in caves at FLW, provide a rationale for developing a long-term inventory and management strategy for cave preservation (See Future Undertakings below).

The enormous amount of archaeological and paleoenvironmental data generated by the Miller and Ramsey Complex projects have greatly furthered the research and management goals of the Cultural Resource Management Program at FLW. The late Holocene (Late Woodland c.a. A.D. 500-1400) components at the caves, rockshelters, and alluvial basecamps are contemporary and are part of an integrated settlement system that included specialized sites such as cairns and petroglyphs. From a management perspective, the Miller and Ramsey Complexes are targeted for development as a public-access interpretive area within FLW, which will increase the likelihood that the sites will be visited by the FLW and surrounding community residents. Therefore, these complexes will comprise a suite of natural and cultural sites located within the Big Piney River corridor as part of the Big Piney Interpretive and Recreational Corridor. Given the likelihood of potential impacts and the need for interpretation, all of the sites will constitute a formal NRHP District nomination (Dunn 1997:405-408). Ultimately the program will achieve our interpretive goals of enhancing public awareness and education (Edging 1995).

Located on Roubidoux Creek, the third site complex is the Lohraff Complex (Ahler et al. 1999; Ahler and Edging 2001; Kreisa and Adams 1999; Kriesa et al. 2000). To date, Phase II test excavations have been conducted at 23PU719 (Albertson Rockshelter) and 23PU739 (Lohraff Rockshelter), 23PU745, the large diffuse blufftop scatter, site 23PU731, a small terrace site, and photograph and line-drawing documentation at 23PU721 (Lohraff Petroglyphs) (Ahler et al. 1999; Kreisa and Adams 1999; Kreisa et al. 2000). Lohraff Cave, 23PU744, due to its pristine nature and possibility of burial remains inside the cave, was excluded from investigation. The cave was mapped as part of a Conservation Assistance Program (CAP) grant directed from CERL in FY1999 and then gated through a partnership with CERL, the American Cave Conservation Association and the Missouri Department of Conservation in the spring of FY2000 as part of the Phase II program.

Site 23PU719 (Albertson Rockshelter) yielded significant archaeological data including radiocarbon dates from the Late Archaic to Late Woodland periods. The site is unique physiographically due to its location at a similar elevation level as the T5 terrace to the south. Looter overburden in Test Unit 1, located in the front of the rockshelter, yielded several Late Woodland projectile points ranging from Scallorn points to a Cupp corner-notched to a late Late Woodland triangular. Below the overburden, Stratum 2, Level 8 contained projectile points, ceramics, and a radiocarbon sample. A radiocarbon assay of  $600 \pm 70$  B.P. (A.D. 1300 [1365] 1420) indicates a late Late Woodland component. Reed and two Scallorn side-notched points were recovered. Level 8 also contained the first evidence of a possible Oneota interaction with the recovery of a globular shell-tempered jar fragment. Neither the rim shape or vessel form appears to be local. A radiocarbon sample from Stratum 3, Level 12 was dated to  $1480 \pm 70$  B.P. (A.D. 540 [600] 650). This sample is from the lowest level that produced ceramic artifacts. This assay represents the earliest dated ceramic-bearing stratum on the installation just slightly younger than those recorded for 23PU235 (Sadies Cave). At the least, the separation of dates and the inclusion of ceramics provided an opportunity to explore variability in the long Late Woodland (A.D. 500-1500) time frame. Plain and cordmarked surfaces dominate and temper is primarily crushed dolomite (Ahler et al. 1999:241). Variation appears to be temporally sensitive with the use of shell and combined dolomite and rounded sand in the upper levels. The recovery of temporally and stylistically sensitive artifacts addresses one of the long-term research goals at FLW that explores interaction and communication between the northern Ozarks and the major river valleys to the east, north, and west.

Its location and artifact assemblage suggest it may be closely related to site 23PU731, located a few meters south on a T5 terrace. Recovery of lithics, ceramics, and floral and faunal material from Albertson Rockshelter reveals a very generalized occupation including hunting, processing, tool maintenance, plant processing and collecting. Large mammals dominate the faunal assemblage; however, fish, birds and other animals are represented. Intensive hickory nut use, maize, and others seed plants indicate that the sites were the location of both horticultural and collecting activities.

Site 23PU745 is a large diffuse scatter located on the blufftop above the cave, rock shelters, petroglyphs and floodplain within the Lohraff Complex. Due to the non-depositional nature of the site, most of the archaeological material was found between 0-40 cmbs, with the majority of material in the upper 20 cmbs. A Late Woodland Scallorn Side-notched and a Kings Corner-notched were found during Phase I survey. Phase II test excavations conducted by the University of Illinois and the Natural Resource Office produced numerous artifacts including a Stone Square Stemmed and Kings Corner-Notched (Kreisa 2000). During the test excavations, a rock hearth or rock concentration composed of large sandstone slabs, chert cobbles, hammerstones and chipping debris was discovered. This feature is similar to the rock features recorded at 23PU554 (Freeman Basecamp) (Ahler et. al. 1997). According to Reeder (1988:70) rock hearth features appear to be common in the Late Archaic component at the Feeler Site. The occurrence of several cores along with chert cobbles and anvils suggests a tool making function although the large amount of fire-cracked found within the feature and across the site suggests that some habitation is represented.

Located on the blufftop above 23PU721 (Lohraff Petroglyphs), 23PU735 (Lohraff Cairn) is a key site type in the Late Woodland site complexes. It is probable that mortuary, clan, and other rituals were performed at this site that are linked to the petroglyph and form a ritual complex within the larger site complex (See above for discussion of cairn site function).

Site 23PU731 is a small terrace site located on the floodplain of Roubidoux Creek directly south of 23PU719 (Albertson Rockshelter). A Late Woodland Reed Side-notched projectile point was found between 20-30 cmbs. During Phase II investigations two sherds were found in Test Unit 2 at 20 cm to 30 cm below surface. These ceramics have an eroded cordmarked surface, and somewhat unusual for the FLW, round sand tempering. Based on sherd thickness, it is probable that the ceramics date to the early Late Woodland period.

Site 23PU739 is a rockshelter just above and east of 23PU744 (Lohraff Cave). Although this rock shelter is higher on the bluff than site 23PU719 (Albertson Rockshelter), they are contemporary. Prehistoric ceramics were located in a basal cultural deposit, at approximately 35 cm to 45 cm below surface. The ceramics include Maramec Plain and variations of Maramec Cordmarked. Also recovered was one burnished sherd with dolomite tempering. Overlying this cultural deposit in Test Unit 1 was an intact ash layer from which a charcoal sample was recovered and submitted for radiocarbon assay. The resultant date was  $510 \pm 70$  B.P. (A.D. 1390 [1430] 1456), the youngest date recorded at FLW.

Site 23PU721 (Lohraff Petroglyphs), is a rock art site within the Lohraff Complex. It is juxtaposed between cairn, blufftop, cave, and creek. It is certain that the Lohraff Petroglyphs are significant to the understanding of prehistoric ritual and settlement. Analysis of the rock art is largely based on Diaz-Granados (1999) and Edging (2000). While some of the motifs are common in Missouri, some are unique and highly suggestive of ritual. In the Osage oral tradition rocks and boulders were thought to have the ability to talk and respond. For example, in *The Osage and the Invisible World: From the works of Francis La Flesche* (Bailey 1995:222-247), La Flesche describes the rites of the chief associated with the great bundle, the initiation rite of a man into one of the three tribal priesthoods. The great bundle was associated with the invisible world, the realm of Wakonda and thus of fertility and long life. As part of the ritual the various clans give simultaneous recitation and one of the earth clans, the puma, mention the great white, black and red boulders, "Verily I am a person who draws to himself the power of the great boulder" (Edging 2000).

The Lohraff Petroglyphs suggest possible historic connections with the presence of earth and sky motifs or the cosmological dichotomy between earth and sky associated with the Osage. The earth motifs can be separated into two groups: the vulvar motifs and an anthropomorphic shaman motif. Vulvar motifs are also found at the Miller and Ramsey Complexes and in southeastern and eastern Missouri. These motifs contain the same elements of a partially bisected circle/oval typical of this motif worldwide. The vulvar represents female or fertility motifs similar to what other researchers have called the Earth Mother or Mother Corn, a female deity known to most Eastern Woodland and Plains tribes (Diaz-Granados 1998:215-218; Hall 1997; Prentice 1986). Archaeological investigations at site complexes that contain

rock art have also yielded maize, grinding stones, and mortars supporting the association with agricultural ritual (Ahler et al. 1996, 1998, 1999; Kreisa et al. 1996). Hall (1997:56) suggests that the bisected oval may represent a mortar and pestle, or Ho'-e-ga, the Osage ritual name for earth. Located on the same rock but clearly separated from the vulvar motifs is a shaman or priest figure (**Figure 2.7**). The Lohraff shaman figure seems to be stylistically unique to FLW in Missouri but conceptually very similar to those seen in the Plains region (Ambrose 1998:65; Diaz-Granados 1998:216; Edging and Ahler 2000; O'Neill 1981). Other motifs that surround the shaman are indiscernible and may have been carved at an earlier or later date.

Just north of the shaman but on a separate rock are motifs that further support the concept of an earth/sky dichotomy. The first motif is a spotted bird that could represent an eagle, hawk or owl, discernible by its claws hanging down at its sides like hands, clearly defined shoulders, three tail feathers and a pecked breast (Diaz-Granados 1998:217; Edging and Ahler 2000) (**Figure 2.8**). The head is indistinct but can be seen under early morning light conditions. The Osage are reported to consider the spotted eagle their most important creature. Many North American oral traditions contain twin sons of the Earth Mother called the "thunderers", one civilized and the other wild. In several of these widespread oral traditions, the wild boy is symbolically killed and then resurrected as a spotted hawk or eagle. The presence of this motif could symbolize a vision quest in which a person seeks a guiding spirit that is then carved on a boulder (Diaz-Granados 1998:217). The motif could also imply a territorial marker for a sky clan group to honor the spotted eagle or hawk. The other motifs located on this rock are bird forms that may also represent sky symbols.

The association of rock art with habitation, processing, and ritual sites within the Lohraff, Miller and Ramsey Complexes has several contextual implications (Edging and Ahler 2000). The use of scaffolding and bundle burials date to at least the Middle and Late Woodland Periods and may find expression in the historic soul/death bundle ceremonies of the upper Plains and Midwest (Hall 1997:28). The Osage Soul Release was a mourning/adoption ceremony that may trace its origin prehistorically. Could similar ceremonies also be the purpose of strategically placed cairns across the FLW landscape? As stated above, while the function of rock cairns has been viewed as burial places, the recovery of only secondary burials suggests that the cairn is only one portion of an extended mortuary process. It is clear that the cosmological and ritual aspects that envelop Osage and other Plains/Midwestern cultures did not spring forth overnight. As with the ceremonies listed above, Osage ritual structure may be linked to the prehistoric era especially in the development of earth/sky divisions, mourning, adoption, naming, and agricultural rituals. The iconography expressed in the Lohraff Petroglyphs at first glance represents examples of an ancient hunting/gathering/agricultural economy. A closer look may also provide us with early glimpses into the ritual processes that later evolved into historic era ceremonies, as well as social and religious structure. The location of the petroglyphs within the context of a cave, cairn and creek, as well as in similar contexts across the installation, strongly indicates a distinctive settlement and ritual complex dating to the prehistoric Late Woodland Period—the last archaeological link to historic era tribes in the FLW region.

There are many individual sites that are likely part of a complex of sites. Three sites that deserve mention for their Late Woodland components are 23PU249, 23PU421 and 23PU614, all located on Roubidoux Creek and all containing radiocarbon dates and intact deposits that date the final occupations at FLW. Although the Davis Caves, including 23PU209 (Saltpeter Cave), 23PU210 (Joy Cave), and 23PU211 (Davis Cave 1) represent another complex within the Dondas Cluster that includes 23PU249 (Renoir Site) and the Lohraff Complex, the severity of vandalism documented at the caves during our intensive Phase II testing, precluded the recovery of a great deal of *in situ* information except for the one date mentioned above. Regardless, numerous Late Woodland lithic and ceramic artifacts were recovered from disturbed and intact contexts. Based on evidence from the entire Dondas Cluster sites it is clear that the entire upper Roubidoux Creek area was intensely occupied during the span of the Late Woodland period culminating around A.D. 1400.



Site 23PU249 (Renoir Site) described above is a small cave and shelter associated with a complex of sites (Ahler et al. 1995; 1997). It is likely that this site and at least eleven others form a temporal and functional complex of sites. Stratum 1, Level 1, radiocarbon assay of  $530 \pm 110$  B.P. (A.D. 1310 [1420] 1455) documents a late Late Woodland component. Stratum 2 yielded diagnostic Maramec Springs Plain and Cordmarked sherds. Like many of the cave sites documented across the installation, 23PU249 was used as a generalized habitation site with numerous hunting, collecting and processing of plant and animal resources occurring at the site.

A radiocarbon assay from Test Unit 2, Stratum 3/4 boundary, Feature 2 at 23PU249 (Renoir Site), produced a date of  $1240 \pm 70$  B.P. (A.D. 690 [785] 885), a date that is very similar to the Test Unit 1, Stratum 4/5 date of  $1260 \pm 70$  B.P. (673 [740] 878) from 23PU210 (Joy Cave), a generalized habitation site that contained abundant early and late Late Woodland material (Ahler et al. 1997: 141).

Site 23PU421 (Jacke Site) is a rock shelter site in the SW portion of the installation overlooking Roubidoux Creek (Kreisa et al. 1996:71). It is likely that the site is associated with other nearby sites and it deserves mention due to the recovery of a significant amount of archaeological information. This rockshelter, and investigations at 23PU364 (Red Oak), 23PU719 (Albertson Rockshelter), and



**Figure 2.7:** Shaman petroglyph from the Lohraff Complex Petroglyphs (23PU721) (courtesy Suzanna Doggett, ERDC-CERL).

**Figure 2.8:** Eagle, Hawk, or Owl petroglyph from the Lohraff Complex Petroglyphs (23PU721) (courtesy Suzanna Doggett, ERDC-CERL).



23PU567(Farview Rock Shelter) have shown that less dramatic geological features often have more intact deposits since they have not been subject to the level of looting in subsequent decades. Although it was evident that some looting had occurred at 23PU421 (Jacke Site), the placement of four test units produced a substantial amount of archaeological data from the Archaic and Late Woodland periods. Charcoal collected from Test Unit 1, Level 3 yielded a late Late Woodland date of  $610 \pm 60$  B.P. (A.D. 1300 [1340] 1410). Scallorn points were also recovered from disturbed contexts. Several dolomite-tempered Maramec Springs Plain and Cordmarked as well as shell-tempered and combined shell and grit-tempered sherds were found. The shell-tempered ceramics were found in the level dated above again suggesting that shell-tempering was introduced, possibly from the Mississippi River region during the late pre-Columbian era. The faunal and plant inventory indicates that both resource procurement and domestic activities are represented at the site with the dependence on large mammals and the use of nuts and maize. It appears that the site served as a late fall/winter habitation from sites located on the Roubidoux Creek alluvial terraces.

Site 23PU614 is located on a small remnant of a mid-Holocene T5 terrace (Ahler et al. 1999:176). A radiocarbon sample from Test Unit 1, Feature 1 produced a date of  $550 \pm 56$  B.P (A.D. 1300 [1365] 1420). A Scallorn point was found in an upper soil horizon near Test Unit 1. All ceramics are considered Maramec Springs and almost all are tempered with combined dolomite and rounded sand. Lithic artifacts constituted the majority of artifacts due to soil acidity. The lithic profile suggests that the site may have functioned as a seasonally occupied field camp within a logistically organized settlement system.

To summarize, research on the Late Woodland period at FLW, when combined with data from the surrounding region, suggests both continuity and change (Brown 1984; Kreisa et al. 2000). Deposits with King's Corner Notched points that have been dated to both the end of the Middle Woodland and the beginning of the Late Woodland are suggestive of a continuity of population between the two periods. There is though, an increase in visibility of the Late Woodland populations that appears related to population increase, a reorganization of settlement, and a change in material culture that archaeologists are better able to separate from earlier periods. Radiocarbon dates suggest a fairly continuous occupation of the study area throughout the Late Woodland period concluding in the mid 15<sup>th</sup> century.

Late Woodland Period research also enhances an understanding and identification of the early and late Maramec Spring subphases. The additional fieldwork and research conducted after Reeder's (1988) redefinition of the Maramec Spring phase contradicts the proposed distinction of only Late Woodland material associated with the early subphase and a thin veneer of Mississippian traits associated with the late subphase. More recently, Reeder (1999) appears to abandon this distinction. There are differences,



albeit more quantitative than qualitative, between early and late Late Woodland sites in the study area. Shell-tempered ceramics are present during the early subphase, but at few sites and in low numbers. This increases after A.D. 900, when most sites have shell-tempered sherds, and in slightly increased amounts. Arrow points are common at early subphase sites, in about similar numbers as larger forms, whereas arrow points tend to dominate late subphase assemblages. Forms such as Kings Corner Notched and Rice Side Notched become increasingly uncommon, in part accounting for the decreased diversity of point types characteristic of late subphase assemblages. Maize is apparently present early, and continues at the same approximate levels throughout the phase. Villages and site complexes also characterize the Late Woodland phase in the region.

At FLW, the investigation of site complexes and Late Woodland sites in general, achieved crucial research and management goals. These investigations are relevant to resolving long-term NAGPRA goals since Late Woodland cultures represent our closest link to historic Native American cultures. While it is the opinion of several investigators at FLW that our archaeological sequence ends at A.D. 1450, it is still vital to understand how Late Woodland Period cultures functioned and how they might relate to cultures that evolved over the next three centuries into historic tribes. The Miller, Ramsey, and Lohraff Complexes are an excellent example of this research potential.

### **2.3.13 Conclusions**

The purpose of this overview is to provide an up-to-date synthesis of prehistoric cultures at FLW. The generation of basic archaeological data through research and compliance projects has greatly furthered our management goals. Without the research thrust typical of our survey, testing, and intensive data recovery projects, major questions would still remain. As a result of this body of data, we have determined long-term climatic change and how Ozark populations adapted to these changes. We have developed new perspectives of how the northern Ozarks fits into the larger picture of Midwestern prehistory. We now know a great deal about the stone tool and ceramic technology of our region and how these technologies changed through time. We have also accumulated data that is essential for building a chronology that indicates the longevity and continuity of prehistoric cultures in the Gasconade drainage. This has in turn contradicted long held beliefs about the marginality of the region. We have also determined how settlements have changed through time coalescing with one of the most unique aspects of our archaeological and management goals: the site complex. And perhaps one of the most exciting results of our work has been the discovery and realization that Native American ceremonialism has ancient roots manifested in burial cairns, caves, and rock art. Equally important, we are beginning to understand how the northern Ozarks interacted with the two major culture areas (Oneota and Mississippian) in the late Late Woodland Period—the culture period most relevant to establishing links to historic era tribes.

### **2.3.14 Proto and Early Historic Period (A.D. 1500-1800)**

This section is based upon several studies (Smith 1993; Edging 2000; O'Brien 1996; Wood et al. 1995; and Yelton 1998), and a recent revision of Smith (2000). For a complete review of tribes that inhabited the Missouri region during the historic period one should investigate O'Brien (1996, 1998), Wood et al. (1995) and Yelton (1998).

The prairie-based Oneota Tradition in Missouri can be traced back to A.D. 12-1300 (Wood et al. 1995:78; Yelton 1998). Roughly coeval with the Mississippian cultures to the east, archaeological remains of the Oneota Tradition are found over a vast area of the Midwest and Upper Plains and relate to historic Siouan-and Algonquian-speaking groups. In Missouri, large, intensely occupied agricultural sites can be found along the major rivers. Archaeological evidence found at these sites invariably includes numerous artifacts, house structures, and storage/trash pits. While agriculture was a major preoccupation, Oneota cultures placed an emphasis on hunting, fishing, and gathering. The bison, a staple of Prairie and Plains tribes in the historic era, comprises a major portion of faunal assemblages at many sites. Oneota pottery is also very distinctive. Typically, Oneota vessels are shell-tempered, globular jars with constructed necks

and convex bottoms (Wood et al. 1995:79). (A possible Oneota shell-tempered globular jar fragment was found in the late Late Woodland levels at 23PU719 (Albertson Shelter) —See above).

Oneota sites contain a diverse lithic inventory including small, triangular projectile points, scrapers, graters, drills, bifacial knives, and ground stone tools such as celts, metates, manos, and abrading stones. Bone tools include bison scapula hoes and knives, punches, awls, needles, gaming pieces, and beads (Wood et al. 1995:79). European trade items include glass beads, copper and brass bracelets. Rare items such as iron knives and gun parts are found in the upper levels at many sites.

Several decades ago Oneota was considered as derivative from a Mississippian ancestor, however, this view has been rejected (Wood et al. 1995:79). An enormous amount of archaeological evidence has shown that Oneota, like Fort Ancient cultures to the east, had an independent history but was coeval with Late Woodland, Mississippian and Plains cultures. Since Oneota did encompass a large region, it is likely that it represents several regional cultures that in turn became recognizable historic tribes. One of these regional cultures was located on the Missouri River at the Utz site. This site has distinctive Oneota archaeological remains dating back to A.D. 1200. Later the site would become the principal village of the historic Missouri (Wood et al. 1995:79). Unfortunately, this archaeological linkage between prehistoric Oneota and historic tribe does not extend to the Southern Dhegiha tribes (Osage, Kansa (Kaw), Omaha, Ponca, and Quapaw).

The Gasconade River Valley is often referred to as historic Osage territory based on the presence of the Osage in late seventeenth-century maps (Bailey 1998:28, 2001:477; Wood et al. 1995; Yelton and Edging 2000). However, these interpretations should account for linguistic differentiation, population dispersal, and archaeological evidence proposed for the prehistoric era (Edging 2000). The Osage and other Dhegiha Siouan tribes separated from the larger Central Siouan linguistic group including Chiwere-Winnebago (Winnebago, Iowa, Oto, and Missouri) and Dakota (Dakota, Mandan and Hidatsa) around A.D. 1000, with a Dhegihan separation as late as A.D. 1300 (Rankin 1997; Springer and Witkowski 1982; Yelton 1998:54). Both dates are significant since the cultures represented in the Late Woodland archaeological record at FLW may have been a larger Proto-Siouan group. Several generations of archaeologists including Carl Chapman (1980) have tried to identify possible prehistoric antecedents to Osage culture eventually settling on either Ozark populations trading with Oneota, Mississippian or Plains groups or actual cultural diffusion into the region by larger more complex cultures. The archaeological evidence at FLW argues for an indigenous Late Woodland culture with late prehistoric characteristics that relate closely to the Oneota and to a lesser degree Mississippian (Kreisa et al. 1999; O'Brien 1996; Wettstaed 1996).

Although separated by language, the Central Siouan and Algonquian tribes are frequently grouped together as the Prairie tribes (Bailey 1995:28). All of them had patrilineal clan structures, formalized priesthoods, clan medicine bundles, mourning rituals, and the calumet ceremony in common. They also shared a common experience in the historic era due mainly to trade and contact with Europeans. Old World diseases such as malaria, smallpox, measles, and cholera swept through the region at various times during the early historic period. Moreover, competition over land and trade intensified warfare between tribes during the 1700 and 1800s especially between the Osage and the Sauk/Fox. Eventually, American expansion pushed many of the Central tribes onto the plains. By the end of the 18<sup>th</sup> century the Osage emerged as one of the most powerful tribes on the Prairie. In the 19<sup>th</sup> century, the Osage entered into a semi-nomadic life and became a dominant force in the southern Plains. The dilemma of horticultural villages across the Plains symbolized the interplay between Europeans, American, and nomads who embraced the horse culture. Throughout this period, the Osage as a culture persisted intact into the latter part of the 1800s (Bailey 1995:29).

During the historic era in Missouri, the Osage consisted of two groups, the Big Osage located in western Missouri on the Osage River and the Little Osage located in western Missouri and along the Missouri River in north central Missouri. However, as Henning (1993), Wood et al. (1995:81), Yelton (1998) and others have stressed, Osage and Kansa sites lack the temporal depth shown in more northerly sites such as the Utz site mentioned above. This has led many to suggest that the Dhegiha-speaking tribes arrived

relatively late. Historic Osage sites contain large amounts of trade goods, including guns and glass beads. In the early 1700s the Little Osage branch of the tribe moved to the Missouri River near the Missouri Indians. From this location the Osage apparently took advantage of the Missouri exchange networks that had developed prehistorically. After several decades of intense trade and warfare with the Sauk and Fox, the Little Osage moved back to western Missouri. Near the beginning of the 19<sup>th</sup> century, the Osage came under pressure from eastern Native Americans who entered the state between 1794 and 1803.

The prehistoric and historic Kansa (Kaw) were located along the Kansas and Missouri Rivers. Although closely related to the Osage in language and traditions, the Kansa were a much smaller tribe. Their size, and adherence to a sedentary horticultural lifestyle suggests that they were not involved as much on the intercontinental scene as their Osage counterparts. Their position along the Kansas River however meant that they came in close contact with the Pawnee as evidenced by artifacts recovered from Kansa archaeological sites. Kansa site assemblages also contain classic Oneota suggesting that the Kansas City area may have been near the boundary between Siouan and Caddoan peoples. The Kansa's historical location also suggests they were strategically located between English, French and American trade goods brought in by the Osage from the east, and Spanish goods from the west via the Plains Apache and the Pawnee. The first reference of the Kansa is from a map taken from the Marquette and Joliet expedition of 1673.

The Dhegiha Sioux namely the Osage and Kansa (Kaw) had close ties to Central Siouan groups like the Missouri through time. Located in both the prehistoric and historic eras in the central part of the state, the Missouri maintained a close trading and military alliance with the French. After one successful campaign in the Great Lakes with their Missouri allies, the French established Fort Orleans (1723-1728) on the Missouri River (Wood et al. 1995:82). This solidified French influence on the Missouri as well as posts located on the Mississippi and Kaskaskia Rivers. Unfortunately for the Missouri, they were defeated in a major battle with the Sauk and Fox in 1790 either as a result of their long-standing alliance with the French or as a result of mistaken identity. The Sauk apparently struck the wrong village or considered the Missouri to be part of the Osage tribe (Yelton 1998:52). Regardless, subsequent warfare with the Osage caused the Missouri to move north and west and eventually unite with the Oto in Nebraska.

Although it is extremely doubtful that many of the intrusive historic tribes have prehistoric Missouri antecedents, many remnants of once larger populations entered the state from the east and north following their displacement by Euro-American settlement or intertribal warfare and alliances (Wood et al. 1995:83). Algonquian speaking tribes including the Delaware, Illinois, Kickapoo, Miami, Sauk and Fox, Shawnee, and the Iroquois-speaking Cherokee all inhabited parts of Missouri in the latter part of the 18<sup>th</sup> and early part of the 19<sup>th</sup> century.

To summarize, however interesting Dhegiha Sioux connections might appear, the problem still remains with the apparent invisibility of historic sites within the FLW region. One must consider that nearly three hundred years separates the last late Late Woodland cultures and the earliest evidence for Osage occupations along the Osage River valley in western Missouri. Comparisons of Osage material culture, settlement patterns and burial practices with Late Woodland Ozark cultures do not exactly fit demonstrating to a certain extent the amount of cultural change that might have taken place (Yelton 1998). And while we have suggested that rock art motifs may indicate some cosmological connections with the Osage these inferences need to be discussed with pertinent tribes. What we do know is the location of the Osage and other Dhegiha groups on historic maps at contact that tends to support some use of the Ozarks.

By presenting this synthesis of Native American archaeology and early history, a determination of which direction to pursue regarding the management of cultural resources can be undertaken. The development of standard operating procedures for the future is a goal that will result from this overview. Much has been accomplished at FLW but, like all CRM programs, it should be viewed as a work in progress. The prospect for new finds through archaeology, iconography, and history is essential to achieving the Army's goal of stewardship. Although this study is not a final word on the pre-Columbian and early historic cultures at FLW, it does present extensive and substantive research that offers directions for our goal of

complying with the NHPA, ARPA, NAGPRA and 36CFR79. To this end, we think this study will benefit Native American, archaeological, and Army communities.

### **2.3.15 Exploration and Early Settlement (A.D. 1700-1840)**

This section is based on Smith (1993) and a recent revision Smith (2000). Many explorers, hunters, and traders ranged through the FLW region beginning sometime in the eighteenth century. Perhaps the first was French explorer Claude-Charles Dutisné who passed through Pulaski County in 1719 (Foley 1989: 18; Wood et al. 1995:81). Dutisné was hired by the Company of Indies to negotiate alliances with the Plains Indians while keeping an eye out for precious metals. After an unsuccessful first attempt up the Missouri River, Dutisné decided to reach the plains via a more southern route. He and his party began at the mouth of the Saline River, and then moved west, the exact route not known. But it is very possible he followed an old animal or Indian path west to the Big Osage village in Vernon County (Schultz 1937: 31; Wood et al. 1995:81). If so, Dutisné was not only the first of European extraction to visit the region, but was also the first to follow a path that would much later become the main transportation and immigration route through the northern Ozarks from prehistory to today. What began as a 'beaten path,' became the interior ridge road, also known as the Old Springfield Road and Wire Road in the nineteenth century, and Route 66 and Interstate 44 in the twentieth. This road passed just north of the FLW area, and variations of it probably passed through the northern part of the fort.

After Dutisné, there was a hiatus in European exploration of the region but by the mid-eighteenth century, French and Anglo hunters were most likely venturing into the Ozarks. These unknown explorers probably began their expeditions from the sparsely occupied French lead mining settlements and forts that were located in Washington, St. Francois, and Madison Counties and forts located on the Kaskaskia and Mississippi Rivers (Rafferty 1980: 41-44; Wood et al. 1995). Besides lead mining, the French engaged in salt making, some farming, and fur trading. The latter activity no doubt brought them to the Gasconade River and its tributaries.

In 1815 or 1816, the Josiah Turpin family initiated permanent American settlement in Pulaski County when they settled at the confluence of the Gasconade River and Roubidoux Creek just north of what is now Waynesville, Missouri (Goodspeed 1889: 101; Turpin n.d.). Few other families followed the Turpins into the region and even as late as 1860, when the boundaries of Pulaski County were for the most part fixed, the county population was only 3,835. This amounted to seven people per square mile, and made Pulaski County the least populated county of the 17 counties that make up the northern Ozarks (Schultz 1937: 74).

The reasons that the region was settled late compared to other regions in Missouri, and never achieved a dense population, were its isolation and lack of fertile farmland (Rafferty 1980: 50; Sauer 1920: 148). This was especially true of the upland plateau between Roubidoux Creek and the Big Piney River where FLW would eventually be located. An 1823 Missouri gazetteer described the land as being "rough, stony, and unfit for cultivation" (Beck 1823: 223). However, its abundant timber resources shaped its historic period settlement and cultural history providing the southern Pulaski County settlers with just about everything they needed. The timber industry came to the region as early as the first settlers and its impact would continue throughout most of the region's history. In Pulaski County, large corporations purchasing immense tracts to cut and then sell or abandon did not dominate the lumbering industry. Rather, the lumber industry consisted of small local companies hiring a few men, or individuals cutting the small stands of timber and rafting the logs to the sawmills.

The FLW region had forests, but there were also large open prairies. Early pioneers found the Ozark terrain rolling with alternating woodlands and prairies. But even the woodlands were park-like, rather than dense forests. "There was scarcely a place that could not be driven to with horse and buggy" (Pulaski County Historical Society, Volume 1, 1982: 5). Small prairies and woodlands were characteristic of rolling southern Pulaski County. There the uplands were described as being "post oak flats" on a

nineteenth century geological map (Broadhead et al. 1873) (**Figure 2.9**). Covering the prairie was a tall grass called 'bluestem,' and were described by settlers as 'tall as a man's head.'

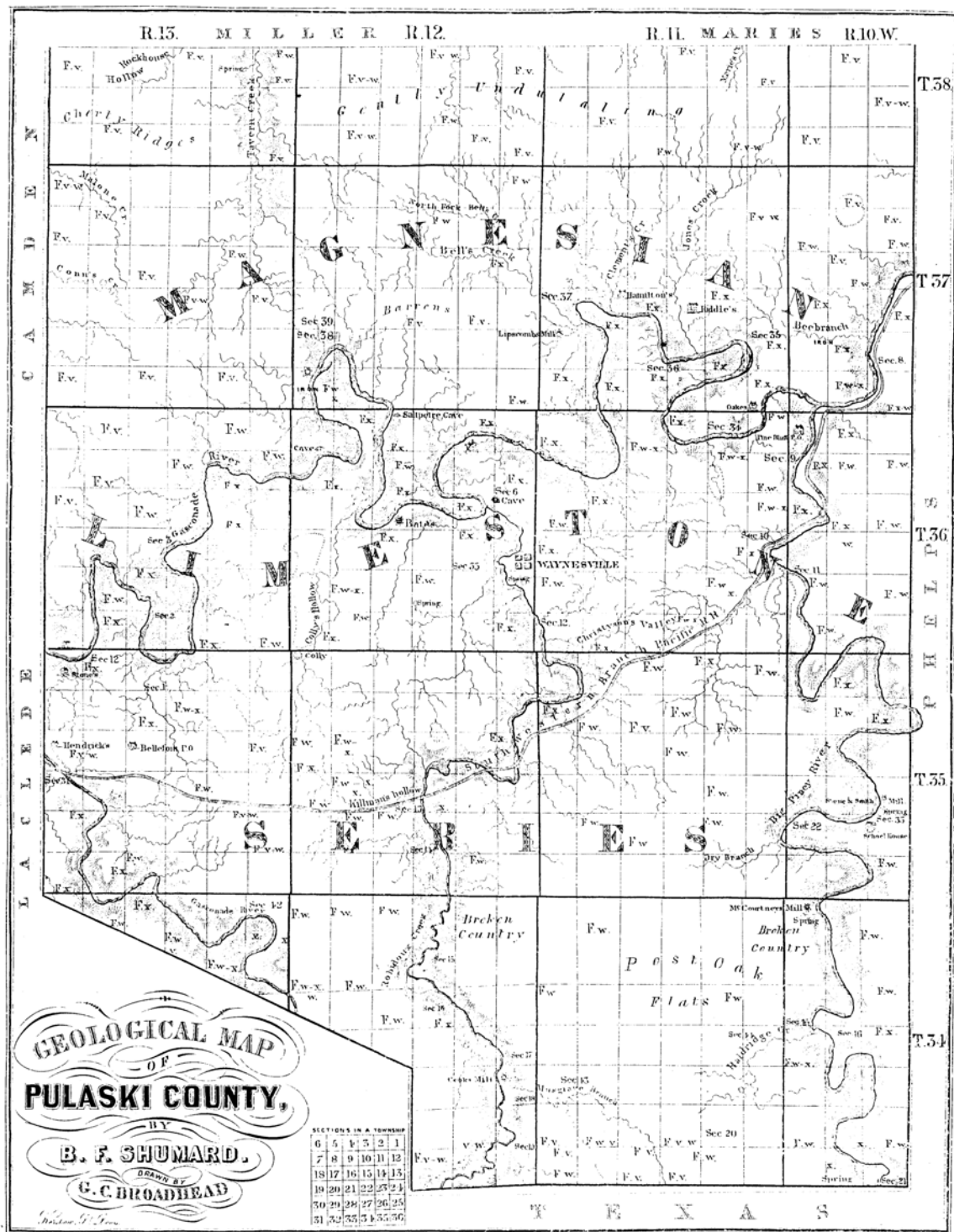
American settlement of the Ozarks effectively began around the turn of the nineteenth century. Missouri experienced an explosion of settlers crossing the Ohio or emanating from the St. Louis area and spreading up the Missouri River. The river routes were the main transportation corridors for settlement and the Missouri was the main northern route. As early as 1806, "the van of the westward movement had reached the Gasconade and Osage Rivers" (Schultz 1937: 41). A few of these settlers turned south to settle on the stony soils of the northern Ozarks. Others moved into the southern Ozarks along a southern route up the White and Arkansas Rivers. The spread into the interior of the northern Ozarks was much slower. "This region [interior Ozarks] of scanty resources served as a barrier that deflected immigration north and south. Only after the border regions of the Ozarks were well-settled did immigrants begin to enter the interior" (Rafferty 1980: 50).

When the Turpin family first settled in the region, some Native American groups were in a state of flux having had their populations decimated by disease, although remarkably the Osage remained basically intact well into the 19<sup>th</sup> century. During the War of 1812, Native Americans renewed attacks against the Spanish Mines along the Mississippi and in the Salt River region (Gregg 1938-39: 11). Although the war ended in 1814, Indian attacks and rumors of Indian attacks were numerous on the Missouri frontier. Indian attacks did not completely subside until 1816 (Gregg 1938-39: 348).

Settlement in the Pulaski County region was slow but steady at the beginning of the Antebellum. By 1811, 250 men were listed on the muster rolls for the Gasconade region built mills and small farmsteads (McReynolds 1962: 52). Although they were farmers who established permanent settlement there were others who were primarily hunters. Because they moved frequently and left no written records we know next to nothing about them. But occasionally, we glimpse them briefly in histories and journals of the time written by others. In 1818 for instance, Henry Schoolcraft, traveled through the Ozarks and recorded meeting a hunter named Alexander Roberts and his wife in a cabin a short distance beyond the Fourche a Courtois, a tributary of the Maramec River, east of Pulaski County (Park 1955: 42). The Roberts' homestead was the last they encountered on their trip through southeastern Ozarks testifying just how alone Turpin and his few neighbors were at that time.

The first people who eventually settled the FLW region were overwhelmingly from southeastern states of the same latitude as the Ozarks, especially Tennessee and Kentucky. The lack of strong government, political organization, and established society, all characteristic of the isolated frontier region around Pulaski County at this time, were strong attractions to these southern upland, highly independent pioneers. Around their cabins they would raise a few acres of corn, but hunting and gathering was the central means of subsistence. Today their attitudes, lifestyles, and ideology are still prominent and define Ozark culture (Sauer 1920: 151-152).

Along with a few hardy farmers and more than a few hunters, the Gasconade, Roubidoux and Big Piney attracted lumbermen, especially the Big Piney River. At about the same time as the Turpin family was making their way down the Ohio River there also came three famous frontiersmen—Daniel Morgan Boone, Sylvester Pattie and Joseph Roubidoux. It is traditionally believed that Roubidoux and Boone entered the Big Piney valley on a hunting trip around 1810 (Bradford 1985: 53). Boone returned on another hunting trip in 1816 with Pattie and shortly afterward Pattie built a saw and gristmill forty miles upstream from the mouth of the Big Piney, at what is now called Paddy's Creek. Pattie's mill was quite a success and drew settlers, and eventually he became the richest man in what was at that time Franklin County. Daniel Morgan Boone joined Pattie for a short time but after Pattie's wife died, they both moved



**Figure 2.9:** Early Pulaski County Map. Data collected in the 1850s (courtesy Missouri Department of Natural Resources, Land Survey Office).

on (Batman 1984: 34-42). Today, Paddy Creek and Boone Creek are about the only modern references serving to remind us of these early pioneers.

Boone and Pattie's operations were soon overshadowed by a wave of millers. Lumber for building St. Louis was one of the first allurements to the Gasconade drainage. By March of 1817, 300,000 feet of lumber were ready for market. Along the Gasconade, there were six sawmills cutting pine timber. Meanwhile far up the Big Piney several mills were all operating by 1826. As far as is known, the first mill on Roubidoux Creek was constructed in 1826 (Beck 1823: 233; Taylor 1990: 40).

From 1813 to 1833, when Pulaski County was formed, the settlers heading up the Gasconade Valley or one of its tributaries like the Big Piney or Roubidoux squatted on the land and awaited the surveyor in order obtain title. By 1828, Gasconade County resident's tax list (which at that time included all of modern Pulaski County and a large area surrounding it), counted 353 male inhabitants between 21 and 65, 101 slaves, 794 horses, and 1,669 cattle (Goodspeed 1889: 102, 106, 776-882). However, it is doubtful that there was more than one or two families within the FLW area.

Missouri became the Missouri Territory in 1812. When Missouri became a state in 1821, FLW was part of a large tract of land within the boundaries of Gasconade County that now includes Osage, Maries, Phelps, Pulaski, Laclede, Dallas, Polk, Hickory, Cedar, Vernon, and parts of Crawford, Dent, Texas, Miller, Camden, Benton, St. Clair, Bates, Barton, Dade, Webster, and Wright counties. The Missouri Legislature established Pulaski County, named for Revolutionary War hero Count Casimir Pulaski, on January 19, 1833. The county was much larger than today but the modern boundaries would, except for a small portion, finally be set in 1857. The modern township boundary lines for Cullen, Roubidoux, and Piney, which contain FLW today, were not fixed until sometime after 1869. The first meeting of the County Court was held at the home of Jesse Ballew on March 4, 1833 and as Waynesville was the only village in the region, it was soon established as the county seat (Foley 1989: 262; Goodspeed 1889:112; Thorndale and Dollarhide 1987: 191).

### **2.3.16 Antebellum Pulaski County**

A noticeable settlement pattern began to take shape across the landscape between 1830 and 1860, consisting of dispersed farmsteads and small hamlets along rivers and creeks. There was also a distinct settlement sequence. Homesteaders first built their farms along the rivers and hollows of the river valleys where the springs and choicest lands were. As new settlers arrived they tended to settle near others, probably not so much as to have neighbors but rather, to settle on the choicest lands. Once the valleys were well dotted with cabins and farms, then and only then would new settlers find good locations on the upland plateau between the two rivers that is today FLW cantonment and interior uplands. The filling in of the plateau region took some 30 years and even in 1860 there was plenty of room for additional settlers.

Two homestead acts in the mid-nineteenth century were initiated to assist the settlement of Missouri. One was the Preemption Act of 1841, which provided that a squatter could purchase 160 acres of land at a minimum price of approximately \$1.25 per acre, if he could provide evidence of cultivation. The other was the Graduation Act of 1854. This act reduced the price of slow-selling public land to a progressively cheaper price beginning at \$1.00 per acre and after ten years without being claimed, to as little as 12.5 cents for land unclaimed after 30 years. The latter act, "accomplished its purpose very well, for not only the poorer land but also thousands of acres of totally worthless stony hills were sold at the reduced rate" (Schultz 1937: 47).

The Graduation Act had the greater influence on settlement within FLW. This can be quickly demonstrated by an examination of land acquisition in the FLW area (Bennett et al. 1996). The first land purchase in this area was in 1831 and throughout the 1830s land acquisition was confined to a few quarter sections along the Roubidoux and Big Piney. Even at the end of the 1840s, no lands on the upland plateau had been purchased and land in only a few additional quarter sections of the region had been purchased along the Roubidoux and Big Piney. In the 1850s, after the Graduation act of 1854, the purchase of land

in the uplands was rapid. In fact, at the beginning of the Civil War, a total of sixty-six per cent of the land that is now FLW had been acquired. Of course, there are likely to have been squatters and hunters in the uplands before the 1850s. There may also have been a few speculators, but not many.

Though the land was purchased, it was not densely occupied. On the eve of the Civil War, there were only 3,835 people in the county. This figure amounts to only 626 families. The population within FLW was even smaller. "Between 1829 and 1840 there were no settlements outside of the valleys. After 1840 there was an occasional settler on the uplands, but the settlement continued to be sparse up to [Civil] war times, and centered more or less toward Waynesville, as the only town in the county" (Goodspeed 1889: 106, 111).

The first to purchase land within the FLW borders was Henry Stuart on May 20, 1831, and his father Henry Stuart Sr. soon followed him, on March 9, 1831. Later that year Washington Smith settled along the Big Piney on November 5, 1831, and George Washington Hines on January 2, 1832. At the end of the 1830s, Amos Deer, George Gibson, Wilson Tilley, William S. Helm, Michael and James Stuart, George Carpenter, and Richard and Jefferson Matthews, Alexander Young, William Bibb, Arthur Brownfield, Comfort McCourtney, Rowley Williams, Charles Finley, Bowling and John Baker, Alfred McElroy, Midian Smith, James and Isaac Robinson, had purchased lands on the Roubidoux and the Big Piney. Their lands amounted to 2,120 acres or three percent of the land within modern FLW. Between the landowners listed here and those thought to be present by historians, the population of FLW totaled forty-five families by 1850 (Bennett et al. 1996; Goodspeed 1889: 106; Turpin n.d.: iii).

These predominantly Scots-Irish people were subsistence farmers. With little capital and few general stores locally available, few items were purchased. The local economy was primarily a barter system. The primary crop was corn. Other staples grown or gathered included tobacco, rye, flax, maple sugar, sorghum, beeswax, honey, barley, buckwheat, Irish potatoes, sweet potatoes, peas, beans, wool, and cotton. Hogs and a few cattle provided meat. Fruit was scarce. The predominance of subsistence agriculture as a way of life was indicated in the 1840 Census of Pulaski County. From a total population of 6,529 men, women and children, 2,065 were employed in agriculture, 111 in manufacturing and trades (these were primarily millers), and all other occupations amounted to less than 100 (U.S. Census 1840).

Through the antebellum two separate kinds of agriculturalists developed in the county. The first was the subsistence farmer. Subsistence farmers were somewhat like the early hunters in their farm economy, devoting much of their time to hunting and gathering, but they also devoted a great deal of their day to growing and tending crops. They hunted, trapped, fished, bartered, and grew a little cotton for clothing, corn for feeding the family and the animals, tobacco for trading and medicine. Arriving in the county at the same time as the subsistence farmer was the pioneer agriculturalist. The pioneer farmer arrived with the full intention of farming as a full-time occupation, raising a cash crop, and creating and participating in a market economy. Pioneer agriculturalists often brought some means of wealth with them and purchased larger tracts of land for farming. They built the mills, opened the general stores, provided the impetus for the formation of local government, and often ran for local office (Smith 1993: 121-125).

Besides subsistence and pioneer farming, and those trades necessary to a frontier existence like blacksmithing, store keeping, and public officials, there were only a few other occupations in Pulaski County during the antebellum period. The 1840 census notes that there were two individuals in mining, 24 in commerce, 111 in manufacturing, 23 in navigation of canals, lakes, and rivers, and 18 listed as in the learned professions and engineers. Many of those counted among the manufacturers were millers. Census figures include 22 grist and flour mills in Pulaski County in 1840, but at that time the county was about three times its present size. The number of mills serving the Roubidoux and Big Piney regions probably did not increase greatly between those built before 1830 and the Civil War, but at least four mills were built at this time. The first of these was G.W. Gibson's mill built in 1831 or 1832. Gibson settled along the lower Roubidoux a few miles from its mouth in 1826 at what became Waynesville, Missouri—the only village in antebellum Pulaski County. Along the Roubidoux, Cook's Mill was built perhaps as early as 1845 (York and York 1975: 163). This mill would become the town Cookville that would last until the establishment of FLW. Across the uplands on the Big Piney, Stone Mill was built



sometime in the 1840s. This area contains Stone Mill Spring, the largest spring on FLW. Today, it forms part of a man-made trout stream and hiking trails. Just downstream and around a huge bend in the river Comfort McCartney arrived in the 1830s and purchased 53 acres. The valley and McCartney's Mill would forever be known as McCartney's Hollow and the family name would become infamous to the Federals during the Civil War (Primas and Primas 1998: 5).

The Gasconade lumber industry that had started in the 1830s was considerable and healthy by 1840. The census indicates that there were 15 sawmills in the county in 1840, counted separately from 22 gristmills. These mills produced lumber valued at \$25,000. By 1852, local farmers cutting their own timber for local use and the Gasconade Valley timber industry had cut most of the good timber along the river (Sauer 1920: 153). Besides millers shaping the timber into lumber, and farmers cutting timber for homes, there were professional raftsmen involved in the industry. Those 23 listed in the 1840 census as river "navigators" were obviously raftsmen. The rivers provided a convenient and practical method of transporting lumber to the mills or to buyers.

But due to the unreliability of the rivers, roads quickly overtook the rivers in importance as transportation routes in and out of the region. Some of the earliest roads in the northern Ozarks led to the sawmills in the Gasconade valley. The earliest road of any consequence that crossed the land between the Roubidoux and the Big Piney was the east and west running animal path or Indian trail that Dustisné followed into the Ozark interior. Throughout its nineteenth century history it was known under a variety of names like the Old Indian Trail, the Kickapoo Trail (1830s), the Old Wire Road or Old Springfield Road (Writers Program 1941: 417). Traders' wagons turned this road into a well-rutted route through the northern Ozarks as early as the 1820s. At this same time the mails from St. Louis were also operating along the route, following the ridgeline to Rolla and then to Waynesville. Waynesville was the main Pulaski County stop once George Gibbons opened his general store there. "By 1858 [the Wire or Springfield Road] had become the most important route of travel and freighting through Crawford, Phelps, Pulaski and Laclede counties" (Schultz 1937: 104). In 1860, a tri-weekly stagecoach ran along this route.

While the interior ridge road was the only well trod path across the county during the antebellum there were other lesser-used paths that local citizens traversed to get to Waynesville, to mills, or to other small villages outside the county. Running south out of Waynesville was another trail that led to Houston in Texas County. This road follows the plateau's ridgeline within FLW. It would serve as the main route onto and off the plateau for the people settling there in the 1850s and come to be called the "old Houston road" and later Highway 17 (Wilson n.d.).

The isolation of the FLW region might have ended at that time had the Civil War not occurred. Plans and surveys were being made in the 1850s to bring the railroad through southern Pulaski County to Springfield. The route would have followed the Gasconade out of Little Piney, and as it entered Pulaski County it would have cut south across the plateau and crossed the Roubidoux south of Waynesville. Just as the war started Irish and German laborers were working on the railroad bed and digging a tunnel in what is now known as Tunnel Hollow near the north gate of modern FLW. Legend has it that many Irish laborers died from disease and were buried in a mass grave near the post gate on modern Route 17. Whether or not the legend is true, the 1860 census lists at least 40 men living in a boarding house in Waynesville and several Waynesville residents putting up Irishmen in their homes (U.S. Census 1860). Besides the Irish were others from northern European duchies and cities like Hesse, Saxony, Prussia, and Baden that make up Germany today. The Civil War stopped completion of the railroad and when the effort was revived during the Reconstruction period the new line was re-routed through northern Pulaski County, bypassing the FLW region.

Throughout the Antebellum, Waynesville was the only village of any size in the entire county and developed early as the county's central node of regional commerce and seat of government. After the mill was and a homesteader named G.W. Gibson settled there between 1826 and 1831, a blacksmith shop was in operation at the mill. Being on the main road and the only village in the region it was logical that it was chosen as the county seat in 1833. In 1840 the first courthouse was built and in 1843, the state Legislature passed an act recognizing Waynesville as the official county seat. By 1860, Waynesville boasted 104

residents, including six slaves. There was one merchant, two grocers, four clerks, three blacksmiths, a doctor, wagon maker, and an attorney. Other residents were laborers, farmers, and a stonemason. On the eve of the Civil War, W.W. McDonald built a double-pen long inn on the east side of the courthouse square, which became the stage coach stop, inn and tavern. McDonald's hotel survived the Civil War and still survives today (Primus and Primus 1998: 6).

Besides the mills and Waynesville, there were few trading centers within a 10-mile (16-km) radius of FLW on the eve of the Civil War. There had been a post office at Little Piney from at least 1833, and there was a stop at Plato in Texas County south of Pulaski in 1855. There was also a post office at Relfe in Phelps County east of Pulaski in 1847 (Schultz 1982: 32, 43, 45). The only little hamlet known within or immediately adjacent to FLW was Big Piney, organized around a church sometime in late 1840s. The town stands today just outside the eastern border of FLW.

Other community centers included churches and schools. On the frontier, the local community to serve both needs often built a single building. The Baptists were the first to organize and build a church in the FLW region in 1832 (Ensminger 1934: 9). Missionary Baptists came in the 1850s and built a church in Smith Hollow. Meanwhile, the Methodists held their first service in the homes of Wilson Tilley and Josiah Turpin around 1833-34 (Little Piney United Baptist Association 1837). Education, like the practice of religion, took place primarily in the homes of the earliest settlers. A formal education was not considered necessary to many Ozark pioneers, even though a public school act was passed in Missouri in 1839. A school system developed 1840. The census lists six schools 1850 and by the eve of the Civil War some 1,199 children were enrolled in Pulaski County schools (Ensminger 1934: 11; Pulaski County Historical Society 1990: 1).

### **2.3.17 Civil War and Reconstruction**

As Missouri prepared for the Civil War, Pulaski County farmers leaned toward the South in sympathy but actual secession was another matter. Candidate Abraham Lincoln, for instance, received only seven votes from the county while southern candidate John C. Breckinridge received the majority at 281 of 457 votes cast (Goodspeed 1889: 135-136). This would imply strong Secessionist support. But when the state convention met in 1861 to decide Missouri's fate, Pulaski County sent moderates to represent them. Then, when the shooting started, the numbers that went North or South ended up about 50 percent each way. By the end of the war, it is clear that the majority ended up in the Union ranks since some who joined the Confederates later joined the Union forces.

There were no major battles in Pulaski County, but there was plenty of violence and many skirmishes. The nature of this conflict was a direct reflection of the landscape. The craggy hills and poor roads restricted the mobility of large armies. But it was ideal country for unconventional warfare, with rolling hills above sharp timbered valleys, potted and twisting roads, and plenty of hiding places in caves and hollows. Warfare in the rugged sections of the Ozarks was limited to small forces, and distinguished by patrols, scouts, raids, ambushes, and bushwhacking (Huff 1991). The landscape also dictated what became strategically important in the war. It was critical to hold the St. Louis to Springfield road in order to control southern Missouri. Securing this road meant controlling the main invasion, retreat, and supply route through the Ozarks. Thus it was important to hold the towns along that route, and Waynesville was one of few villages between the critical railhead at Rolla and the town of Springfield.

Pulaski County men joined the Union or Confederate armies, militia, guerrilla unit or bushwhackers. Those few men who stayed on their farms in Pulaski County found it very dangerous. Many families attempted to escape the violence by immigrating to Illinois. Their abandoned farms were soon looted and burned. Some women and children stayed in the region, but moved to Waynesville. Whether homes and farms were abandoned, held, raided, or burned, the crops and loose stock were harvested and rounded up by the guerrillas, soldiers, and outlaws roaming the countryside, "between the two [soldiers and bushwhackers] the stock, produce, money, everything almost that had ever been produced in the county, was consumed, and outside of Waynesville but little building was left" (Ellis 1864).

Shortly after securing St. Louis on May 10th, 1861, Union General Nathaniel Lyon moved west in a two-pronged assault into the interior of Missouri. One flank steamed up the Missouri to Jefferson City and the other boarded trains for Rolla. The Rolla flank was made up of Germans, or "Dutch" as locals called them, under the command of Colonel Franz Sigel. Arriving on June 14, 1861, they quickly secured Rolla and never relinquished it (Bradbury 1997: 2-3). On August 10, 1861, the combined forces of Lyon and Sigel met the Confederates at Wilson's Creek and after initial success lost the battle. As the Union made their way back up the interior road toward Rolla, families of unionist Ozarkians crowded the road as refugees. Once back at Rolla, the Federals dug in, building a fortification and artillery positions in and around the town. For the rest of the year the Union consolidated this position making it the headquarters of the Rolla Federal Military District and main supply depot supporting future efforts westward. By January of 1862, Union strength had reached 12,000 troops (Bradbury 1997: 6-7). Then once again, they marched down the interior road passing Waynesville on their way to Springfield.

The Federal army arrived at Springfield in February and defeated the Confederates at the Battle of Pea Ridge in March 1862. Up to this time, Waynesville had been just a stop along the invasion route. But with the victory at Pea Ridge, Waynesville became an important link along the supply route between St. Louis and Springfield. The Federals arrived at Waynesville to stay on June 7, 1862 under the command of Sigel and the 13th Missouri State Militia. The Union soldiers constructed a fort on the hill southeast of the town to guard the St. Louis-Springfield road. Colonel Sigel's mission was clear and concise: "Keep open the road from Rolla to the Gasconade and clear the surrounding country of Guerrillas" (Primas and Primas 1998: 20).

There were at least twenty-three separate actions between the Union forces and Confederate guerrillas in or near Pulaski County from July 6, 1862 until January 1865, classified as skirmishes, scouts, operations, and affairs (Dyer 1908). William O. Coleman led one of the more aggressive guerrilla bands that operated in the FLW region and south of the region around Houston, Missouri. Coleman often attacked and raided Union wagon trains and on one occasion on May 26, 1862 attacked a train and escort amounting to as many as 80 men. On July 6, 1862, the 13th Missouri at Waynesville was ordered south to scout along the Big Piney and came close to capturing Coleman when they raided his camp (King 1985: 36-37).

Two particular incidents sealed the fate of a couple of well-known and long-time settlers of the FLW region. The first was the raid on McCourtney's Mill located along the Big Piney in McCourtney's Hollow. Alex, and William McCourtney settled in the hollow in the 1830s. Apparently they were ardent secessionists but did not fight for the South. Instead, their mill became a "hiding place," for Confederate guerrillas. Eventually, the McCourtneys were enough of a threat that on December 22, 1864, a Union detachment of 35 men of the 17th Illinois Cavalry raided the mill to capture the inhabitants and two men were killed (Official Records 1864:Series 4, Volume 41). The second incident was the death of Wilson M. Tilley on September 10th, 1864. The circumstances surrounding his death are murky, some stories stating that he was shot or hanged by bushwhackers others that the Union army hanged him. The Tilley story is especially interesting because one account maintains that bushwhackers who were after his gold killed him. In 1962, a bulldozer digging up the Roubidoux floodplain on Tilley's old land came across two boxes of coins amounting to several hundred dollars (King 1985: 95).

Eventually, events far from Missouri brought the war to a close. For the people of the area there was no single day in which the war was really over. It simply slowed to an agonizing, uneasy peace. Although they would eventually hear that Lee had surrendered, Union soldiers did not leave until July. It would take some time before the woods were again safe. At the end of the war, the FLW region, like the rest of the South, was a ruined landscape. In the valleys along the Big Piney and Roubidoux, few buildings were left standing, fields were grown over, and most of the people had disappeared. Within FLW itself, there was less destruction, primarily because there were fewer inhabitants or strategic points worthy of attention by either side. Waynesville was also ruined, and although a few buildings like the old stagecoach stop remained, many others were burned or stood empty (Primas and Primas 1998).

Such was the landscape for those who returned but many did not. Having moved north to Illinois or south into Texas, many families saw no reason to go back to Pulaski County. Those that returned often found

their homes destroyed and decided to move west also, abandoning their land. Others would lose their land once taxes were assessed. Moving west or to another county and starting over seemed the best option. The transition to a peacetime life was difficult and the new Radical government in Missouri did not make it easier. Those who had fought for the South were forced to sign loyalty oaths, vowing they had "never given aid or sympathy to the Confederate movement" (Rafferty 1980: 90). Within Missouri this act disenfranchised a third of the voters. Interestingly, the 1866 vote reestablishing government in Missouri recorded 120 Pulaski County men for the Radical Party and 163 for the Conservative Party. It would appear that many took the oath in order to vote (Parker 1867: 56). Eventually in 1870, the oath was modified to a simple declaration of support for the state and federal constitutions.

After the war in the northern states, immigrants were driven west by the opportunity for land ownership, and found great opportunities in filling the vacuum left by former Missourians. One of the first acts of the Radical General Assembly in Missouri was to pass a law creating a State Board of Immigration to publicize and encourage immigrants to Missouri in February 1865 (Demaree 1975: 170). Between the two censuses of 1860 and 1870, Missouri saw a forty-five percent population increase. Many of the people who made up this influx came from a different part of the United States than the earlier settlers. Whereas the early settlers were overwhelmingly from Tennessee and Kentucky, these new immigrants were from northern states like Illinois, Ohio, and Indiana. By 1890, Illinois had supplied the greatest number of immigrants to Missouri (135,585), followed by Kentucky (99,985), Ohio (84,907), Indiana (70,563) and Tennessee (67,591) (Fellman 1989: 242). Pulaski County was a recipient of this influx also. In Pulaski County, the population increased twenty-three percent between 1860 and 1870. This wave would continue through the 1870s when the county experienced a population increase of fifty-three percent, an influx only duplicated much later by the arrival of thousands of workers and soldiers on the eve of World War II. What attracted these people to the Ozarks and Pulaski County was a combination of free and abandoned lands, available through the Homestead Act of 1862 or through county auction for payment of back taxes, and most significant, cheap railroad land. The Civil War had, in many respects, wiped clean the antebellum landscape, and a new landscape would develop, fostered by the railroad.

Almost immediately after the war, Missouri's interest in completing rail lines across the state revived. In 1866, the state acted to sell the southwestern route that ended at Rolla. John C. Fremont bought the Atlantic and Pacific but only completed it to Little Piney (Arlington, Missouri) in 1867, and then defaulted. The state seized the railroad again and found new entrepreneurs who quickly formed another company, this one called the South Pacific Railroad. They pushed the rails to Lebanon by 1869, and on May 3, 1870 the railroad was opened to Springfield (Fitzsimmons 1940-41: 188-206).

The effect of the railroad's completion on Pulaski County was immediate and profound. The railroad altered just about every aspect of the county landscape, from its population and settlement patterns to its economic and social patterns. For southern Pulaski County the most significant impact was that the railroad route changed. Abandoning the more expensive southern route, the railroad chose higher ground north of Waynesville and the Gasconade, in more open rolling land. The effect was that settlement, channeled and assisted by the railroad, would concentrate in northern Pulaski County instead of the FLW region. North of the Gasconade, along the railroad, a progressive Ozark farming community would develop, led often by newly arrived families from northern states, with a infusion of northern European immigrants. South of the Gasconade, on the plateau between the two rivers, a more traditional Ozark subsistence farming community would persist.

The population and settlement pattern changes caused by the location of the railroad north of the Gasconade are clearly evident, "for the first time sprang up other towns than Waynesville along the railway, and almost simultaneously too" (Goodspeed 1889: 111). These railroad towns included Dixon, Crocker, Swedeborg, and Richland, which throughout the late-nineteenth century, grew at a faster rate than Waynesville. By 1889, Richland had a population of 600, Dixon 500, while Waynesville, the county seat, grew to only 150. Though Waynesville would remain the "center of the wealth of the county, and its business is still good, the greater activity in business is, of course, located about the railway—the greater town being Richland" (Goodspeed 1889: 111).

Significantly, the South Pacific Railroad, later becoming the St. Louis and San Francisco Railroad, accelerated the recovery of the landscape and shaped its development. The national railroad system had another impact on the FLW landscape. In 1865, there were 35,000 miles of railroad track in the nation. Only eight years later, this mileage had doubled, and by 1904, some 200,000 miles of track were in use. Each mile of railroad track used some 3,000-hardwood crossties and the FLW region had an abundance of these hardwoods. The need for crossties created a cottage industry and tradition that would last until the early twentieth century. The oak timber was also valuable for barrels, furniture, tool and implement handles, posts, poles, charcoal, and baskets, besides local needs for home heating and cooking. In combination, these needs would clear the landscape of its woodlands (Hofstadter et al. 1967: 516, 522; Rafferty 1980: 172).

Crosstie production, or tie hacking, a product of the railroad industry, changed the southern Pulaski landscape in other subtle ways. It provided the people with a ready source of income when cash was needed. This allowed the subsistence farmer to persist in his traditional bartering economy long after a cash-oriented market was established in the northern part of the county. Also, while settlers purchased much of the railroad land and some was donated for schools, a significant amount remained in railroad ownership. These vacant lands attracted landless poor who squatted on the land and cut ties for the railroad.

### **2.3.18 Late Nineteenth Century**

General or diversified farming began around 1870 in the Ozarks. In contrast to the subsistence farmer, the general farmer participated in the local and regional market economy, and shipped his products to Rolla or St. Louis via the railroad. He was by definition a generalist, growing a variety of crops, fruits, and livestock on his own land. He might have both dairy cows and cattle, and certainly a few hogs. Corn remained their staple, but other grains and fruits were grown for home consumption. General farmers also cut timber from their own wood lot for quick sale, and they also might hire a neighboring subsistence farmer to help out. They might even form a small temporary timber company to cut trees during the winter months.

The success of these general farmers was assisted by the arrival of the railroad by providing market access and bringing manufactured goods into the region. For that reason, the general farmer flourished in the northern part of the county. The rest of the region of the Osage Gasconade Hills area, including the future FLW area, remained primarily in a subsistence-farming mode. But this changed somewhat towards the turn of the century when specialized farming, especially dairy farming, became widespread in the Ozarks. The grassy upland plateau in southern Pulaski County was suitable for this kind of husbandry. It is probable that the larger farms on the plateau were specializing in dairy farming by 1910 (Rafferty 1980: 154, 161)

Census data give an indication of the relative prosperity of the late nineteenth century Pulaski County farmer. The census indicates slow but sustained growth. The number of farms in Pulaski County grew from 839 farms in 1880 to 1,696 in 1910—more than doubling in number. Some of this growth most assuredly represents the breaking up of parcels into smaller lots as families grew and the older farms were divided among heirs. Most farms were between one hundred and 200 acres. The average size of a Pulaski County farm in 1900 was around 129 acres.

The architecture of homes and farms remained unchanged from the antebellum through the mid-twentieth century, a visible example of the persistence of the southern Pulaski County landscape. Across the Upland South the pioneer built his horizontal log house and sheds, using modular (pen and crib) construction. Single-pen, double-pen (dogtrot) or saddlebag (chimney between two pens) was the standard homestead plan throughout this period (**Figure 2.10**). Sometime during the late nineteenth century these log structures might be sided with lumber cut from the mill to fashion a siding of board and batten. Here the walls consisted of flat wide slats nailed side by side over the log structure, with thin wood slats covering the cracks between the wider slats. The more prosperous Ozark farmer might even build a two story I-

house, symbol of opulence in the Upland South. The classic I-house consisted of a rectangular two story house one room deep and two or more rooms wide, the central room often being a hall between the two rooms. Chimneys were built along the outside end gables. In the Ozarks, chimneys could be built cheaply with the abundant rock, although some poorer families might build a stick and mud chimney above a stone foundation, or as Goodspeed notes "The hills furnished the stone fire-place, ... chimney sticks and mud for the poorer, and stone for the more able." Flooring, if the cabin had flooring, consisted of a hewn smooth log, called puncheons, and the roofs were constructed of slabs of wood cut from blocks and placed overlapping so as to keep out rain. These were called calkboards. The sunless cabin interiors were lit at night using a grease lamp. This was simply a bowl of grease with a strip of lighted cotton cloth as a wick.



**Figure 2.10:** The McCulley Family, ca. 1905 on Roubidoux Creek (courtesy Pulaski Co. Historical Society)

Sauer (1920) provides a detailed look at the Osage-Gasconade rural landscape at turn of the century. He notes that, while sixty to eighty percent of the land in Pulaski County was farmland, only twenty-seven percent of Pulaski County land was classified as "improved." The average number of acres of improved farmland per farm in Pulaski County was from fifty to fifty-nine acres. Assuming that the average farm size in 1910 was near the 129 acres it was in 1900, then the typical Pulaski County farm had only a third of its acreage in crops, the remaining land woodlot. This would remain the case through the early twentieth century but change dramatically in the 1920s (Sauer 1920: 178, 180, 182).

Although small, Pulaski County farms were typically owner operated in 1880, only 174 (twenty percent) of the 839 Pulaski County farms were on shares—another nineteen were rented, but the remaining 646 farms in the county were owned. Sharecropping remained low throughout this period. In 1890, 958 farms were owned, twenty-six rented, and 323 (twenty-five percent) were on shares. In 1900, the 1,512 farms in Pulaski County were divided as follows: 904 owned, 114 part owners, thirty-five owners and tenants, nineteen managers, forty-four cash renters, and 396 (twenty-six percent) on shares. Tenants in Pulaski County were landless white squatters who probably had been in the region for some time (U.S. Census 1880, 1890, 1900).

Despite the Panic of 1873, and a grasshopper plague in 1874, Pulaski County's agricultural production gradually increased during the late nineteenth century. The increases were probably a direct reflection of increased farm population and farms rather than increased yields per farm. Corn, oats, wheat, butter, and wool were among the most productive crops, but corn dominated the fields and farms of Pulaski County.

Besides corn, the other mainstay of the Upland South diet was pork. Swine production increased until 1890 reaching 23,245 and then declined slightly. Cattle and dairy cows also peaked in the 1890s at a combined total of 15,177, and then declined. In 1909, there were only two to three cattle per square mile (Sauer 1920: 200). While farming was critical, gathering, hunting, and trapping made up a significant portion of the farm economy. Gathering apples, berries, plums, was a part of the seasonal round. Nuts supplied a nutritious food, and the Ozarks was known for its hickory nuts and black walnuts (Rafferty 1969: 216).

Game and fish were so plentiful that it wasn't long after the Civil War that the region gained the attention of hunting and fishing clubs as far away as St. Louis. By the 1890s, the combined scenic splendor and abundant fauna of the Gasconade and Big Piney attracted sportsmen in ever increasing numbers. The Big Piney and Devil's Elbow area were among many locations of campgrounds and hunt clubs (Morrow 1998: 3-18). River lodges on the Big Piney near Stone Mill and Rolling Heath School were built in the early 20<sup>th</sup> century.

Through the late-nineteenth century and into the twentieth, Ozark roads usually followed the ridgetops. While the number of roads increased as population and traffic increased, they were still little more than dirt trails that became impassable after heavy rains. A round trip in a supply wagon would take two days from Crocker to Big Piney even as late as the turn of the century (Hicks 1977). Road improvement would not make much progress until the 1920s. In the FLW region, the old Houston Road ran south out of Waynesville followed the central ridgeline between the Roubidoux and the Big Piney. It ran south to Houston and was the only road in the region, other than small trails. As settlement increased, river trails became less and less used and roads running directly towards Waynesville increased in traffic and importance. In 1889, historian Goodspeed noted, "at present the chief county roads are the old "Wire Road," [Springfield Road] and the Union Road; other county roads are made from towns to some populous settlements whose trade is desired. There are no county bridges; two ferries are on the Gasconade, and twenty-nine fords, with fifteen fords on the Big Piney" (Goodspeed 1889: 120).

Waynesville was the distribution center for the people in the FLW region in the late nineteenth century, and maintained a tenuous hold as the county seat. Waynesville was a small but viable little community while the railroad towns received the flux of immigrants. Eventually enough people settled in Waynesville to incorporate in 1901, but in 1910 the population was still only 257 (Goodspeed 1889: 117, 152). In 1889, the town included a barber, watch repair shop, groceries, post office, drugstore, stock dealer, meat market, bootery, livery, the Waynesville Hotel, two blacksmiths, one carpenter, a physician, four attorneys, the Pulaski County Signal's offices, and a brick courthouse sixty by forty feet, and twenty-two feet high. Unfortunately, at 3:00 A.M. on June 13, 1903, this courthouse was struck by lightning and burned.

Travel to Waynesville continued to be a tough journey over rough roads, and as the plateau population grew large enough there was the need for small, local, trading centers (i.e. general stores with post offices included) serving the populations weekly needs. There were many trading centers that began operation after 1880, an indication that the region had reached a population threshold by that time. Like the mills of the antebellum, these little central place nodes served the local farm families as centers of trade, education and religion. Cookville began as Cook's Mill and by 1878 a cluster of buildings, including the store and post office, were built. Another little central place was Big Piney, on the bluff above the Big Piney River. Bloodland, the largest town in what would become FLW, probably dates sometime in the late 1880s. By 1900, it had a schoolhouse, a dry goods store (post office), a Methodist church, a mill, and several houses (Hicks 1977; York and York 1975: 157).

Other small hamlets and towns had their origins in the late nineteenth century. Among the list of nineteenth century post offices were Moab, Palace, Tribune, Wharton, and Wildwood. Besides towns and roads, schools and churches were visible examples of a growing southern county. By 1873, Pulaski County schools were organized into forty-nine districts, located in eight frame and twenty-three log buildings with a total value of \$6,115.00. "There were 29 male and nine female teachers, the men drawing an average of \$30.91 and women \$22.75 per month. Beginning around the 1880s and continuing into the



turn of the century, one-room schools slowly increased in number within FLW. Among these schools was the Rolling Heath School House built in 1912 to replace Buck's Skull dating to the late 1800s (**Figure 2.11**). Located on the Big Piney River east of the FLW cantonment, the school still stands as a result of funding from the DoD Legacy Resource Management Program. The school is only one of two extant structures standing after the construction of FLW during World War II. In 1993, The Cultural Resource Management Program, FLW determined that the Rolling Heath School House was eligible for the NRHP. The Missouri State Historic Preservation Office (MSHPO) concurred.

The majority of Pulaski County citizens were Baptists, and as noted earlier, they soon organized under the Southern Baptist Association. Within the area that became FLW, Baptist churches rebuilt or established after the war included Friendship, near Bloodland (established 1859), St. Anne, near Cookville (established 1900), Hopewell Baptist in Big Piney (established at least by 1869, see previous chapter), and Rolling Heath. In Waynesville there were two Baptist churches in the late nineteenth century, the H.E. South Baptist (established 1884) and the Missionary Baptist (established 1877). Besides Baptists, the Methodists were also strong in this region (Ensminger 1934: 95-97). Near these churches would appear cemeteries, and while the church buildings are gone, twelve cemeteries are maintained by the U.S. Army today.



**Figure 2.11:** Rolling Heath School House (courtesy Joe Proffitt, Natural Resources Branch, FLW).

The 1880 U.S. Census of Manufacturers lists only five flouring and gristmills in Pulaski County, with only six people employed. Ironically there were no sawmills listed in the postbellum census of Pulaski County, ironic because the loss of the timber was the most visible impact to the landscape. Tie-hacking along the Big Piney River in Pulaski, Texas, and Phelps Counties became a steady source of income for farmers and

professionals between the late-nineteenth century and the 1920s. The Big Piney River emptied into the Gasconade River, and downstream of that confluence was the town of Arlington on one bank and Jerome on the other. Arlington's strategic point on the river had made it a focal point for trade and pine timbering along the Gasconade. With the war over and the railroad in full operation, Arlington became even more important to the tie-hacker. The tie hacker could either raft their ties to the railhead or haul them with oxen and horses. With a long steady demand for ties, the people "made it in the timber," according to long time resident George Lane. Around the 1870s a tie-hacker could, on average, make thirty ties per day and sell them for fifteen cents per tie. At the peak of the tie-cutting days during World War I, ties were going as high as \$1.25 a tie. With this kind of money available, ties were cut either by farmers from their own woodlots—especially during the winter months—at the saw mill as a by-product of small logs, or by the professional tie-hacker. The primary source was white or post oak, which the railroad preferred because it gave a little "bounce" when the train ran over the track (Arthur 1940: 10).

Along with tie hacking, tie rafting required considerable skill and daring (Primm 1998). Rafting was often conducted in the dead of winter and rafts contended with icy waters. Like the flatboatmen on the Ohio River of the early antebellum, Ozark tie-hackers and rafters gained notoriety for their exploits, fighting, and hard living. Tie-hacking and rafting as a professional occupation continued throughout the latter half of the nineteenth century reaching its peak around World War I. Then it slowly died in the 1920s, the result not only of trucks replacing the raft drives, but also and primarily because so much of the good



hardwoods were gone. But tie hacking was still done in the 1930s by private landowners (Rafferty 1980: 178). Today, a tie-hacking slide was discovered just east of Rolling Heath School House.

### **2.3.19 The Landscape Exhausted, 1900 to 1940**

The first decades of the twentieth century were peak years for the county's population, agriculture, and timber industry. Pulaski County at this time was full of promise and peace. There were still timber and game to support the people on the plateau in its backwoods lifestyle. Though the soils were poor, a farmer could still raise a crop by clearing a new field. It was a good time to be an Ozark farmer. Across this landscape evidence of human occupation was everywhere. There were dirt roads connecting tiny communities and small neat farmsteads. But gradually, from this time until 1940, the landscape would slowly lose its ability to support the continuing exploitation of its naturally poor soils and finite timber resources.

All of Pulaski County became increasingly tied to the national and world economy during the early twentieth century. This was a period when the backwoods farmer was introduced to the world. While the railroads continued to play their part in exporting timber and bringing into the county modern material goods, there were other elements that brought the two together. The development of mechanized transportation and farming (autos, airplanes, farm machinery), World War I, Prohibition, Depression, and finally World War II, all contributed to the people's awareness and dependence on the world beyond the Ozarks. Through the next 30 years Waynesville remained the county seat but other towns like Richland, Crocker, and Dixon along the railroad line grew faster and were of increasingly greater importance to the county's economy (Ensminger 1934: 7-8, 34). Continuing a trend that began in the late nineteenth century, the FLW region was left behind in seeing modern improvements.

County population peaked in the 1910 census, dropped by eight per cent between then and 1920, and then leveled off until the army arrived. It is difficult to get a precise picture of the population change in the FLW area but at the township level it would appear that the population remained almost static. Cullen, Roubidoux and Piney Townships encompass FLW, but Cullen also includes Waynesville and the main corridor of non-rail transportation. Throughout the period between 1910 and 1940, Roubidoux and Piney, in the extreme southern portion of the county, held less than eighteen percent of the population, while Cullen actually increased its population, reflecting the growing importance of the interior road, now called the Springfield Highway. In 1930, Pulaski County's population per square mile was only 19.8, not nearly as dense as counties along the Missouri River like Franklin (34.7) and Cole (79.3), but not as sparsely settled as other Ozark counties like Texas (16) and Dent (14.7) (Ensminger 1934: 20).

The population of the county remained white. The African-American population had reached as high as sixty persons in 1880, but quickly fell into the twenties and thirties after that. The number of blacks continued to decline until in 1940 there were only three, a single family living in Cullen Township (U.S. Census, 1920, 1930, 1940). The population remained not only white but also rural and overwhelmingly occupied by agricultural pursuits, especially in the FLW region. For example, an occupational survey from 1910 Census for Piney Township indicates that 168 males listed their occupation as farmers, and 136 others (mostly sons of farmers) were listed as farm laborers. Other occupations were represented in minor numbers: nine retail merchants (general stores), five tie-makers and five tie rafters, four men with independent incomes, three mail carriers, three laborers, two teachers, two physicians, two salesmen, two carpenters, a stock runner, a stable manager, a hired hand, a blacksmith, an engineer at a sawmill, a store manager, a bank cashier, and a retail salesman (general store). Little changed in this pattern over the early decades of the twentieth century. The total population of the county in 1930 was 10,755, with 3,219 males, and 341 females listed as "10 years old and over engaged in gainful occupations." Of the males, 2,064 were farmers or farm laborers (sixty four percent), twenty-one were in forestry and fishing, sixty-eight were in mining, eighty-seven were in the building industry, and twenty-three worked in saw mills (U.S. Census 1920, 1930, 1940).

Agricultural prosperity in the Missouri continued up through World War I, and the war brought even greater demand, inflating prices. By 1919, wheat was selling for \$2.09 a bushel and corn for \$1.38 a bushel (Meyer 1963: 566). Farmers rushed to take advantage of these prices clearing more land and mortgaging their homes to buy new equipment. After the war there were surpluses, no markets, and bankruptcy. For the market-oriented agricultural community, that is for most of the general and special farmers of Pulaski County, the Depression years began early, and relief did not come until WW II. Between 1930 and 1934, 18,000 Missouri farms were seized for taxes. By 1939, there were 70,000 fewer farms in Missouri than in 1900. Added to the economic woes of the nation, droughts occurred in 1930, 1934, and 1936 (Meyer 1963: 632).

Despite the down turns in the economy and natural disaster, farming in the Ozarks persisted. The number of farms under 50 acres was 304 in 1920 and 290 in 1930, an insignificant change. The average farm size remained steady, at approximately 152.7 acres in 1920 and 151.9 in 1930. In Pulaski County, as the land grew less productive, dairy farming and raising cattle became one of the more productive survival mechanisms. This commodity became so important in the 1930s that the northern Ozarks including Pulaski County was called the "Ozark Meat Production" region (Ensminger 1934: 132). Thus, through the first half of the twentieth century horses, sheep and swine fall in numbers and beef cattle figures rise in the censuses. Milk cows increase only slightly and butter actually declines through this period. The statistics regarding how the Pulaski County farmer was utilizing his land supports the contention that there was a greater devotion to grazing animals by the 1930s. At that time only twenty-five percent of Pulaski County agricultural land was in cultivation, while thirty-one percent was in pasture.

Just prior to the building of FLW, the U.S. Department of Interior sponsored a detailed study of the land that would be developed as the installation. Published in 1941, this study confirms the importance of cattle on the plateau, while at the same time noting that the farms there were not large ranches, but small family run affairs. "Although livestock production is the chief source of income for the farmers of the area, thirty-five per cent of them had less than six animal units upon which dependence for a livelihood was placed." Albert Mussan, the author of the study, did not praise the quality of these cattle. The problem lay with the open range system. "Not much can be expected along this line [improved livestock quality] until the stock is segregated in the pastures and prevented from running on the range where scrub males prevent any systematic development" (Mussan 1941: 16, 67, 74). Pulaski County closed open-range grazing just prior to World War II.

Corn remained the dominant crop, covering twenty-eight percent of the county's cultivated land in 1930. Oats played a role also as did wheat. During the 1930s, tomatoes became a popular crop among the farmers in the prairie areas around Bloodland and a tomato-canning factory was built. Again emphasizing the change in the landscape, farmers on the plateau were also growing clover as graze.

Roads saw improvement during the twentieth century impelled by the invention of the automobile. The momentum for road improvement first came as a result of the establishment of rural free delivery, which was pushed across the state at the turn of the century. In order for a mail route to be approved it had to be along a road passable throughout the year. The impact of Rural Free delivery on the county is not clear, however, the 1921 Centennial Road Act had a profound impact. The act's goal was to create a road network connecting Missouri's county seats. The state followed this act in 1927 with a bond issue for farm to market gravel roads. Both acts assisted in the improvement of the Old Springfield Highway (part of Route 66 in 1930) (Rafferty 1980: 108-111). For the FLW region, the farm to market road bill had a more profound impact on the landscape than improvements on Route 66. This act provided the impetus to refurbish Highway 17, the old Houston Road that ran north south along the small ridge from Waynesville south, through Bloodland and to Houston in Texas County. Eventually, the road was re-routed north of Bloodland in the 1950s. Backcountry folk may have remained strongly attached to agricultural customs and traditions of their ancestors, but they quickly adopted changes in methods of transportation. Some forty-five percent of the residents in the area had automobiles by 1941 (Behymer 1941).

The automobile was the harbinger of things to come for Pulaski County and the potent of Waynesville's twentieth century revival. Without the automobile, Waynesville could not have competed against the

northern railroad towns. With the invention of the automobile and the necessary improvements to Missouri's road system to support the auto and truck, Waynesville found itself once again on the main pathway into the Ozarks.

Though Waynesville continued to serve the needs of many of the residents in southern Pulaski County, Bloodland grew to become the largest village within the FLW region. By 1930, Bloodland had a population of 100 people. It had a wide range of stores, mills and services available. Some of the more noteworthy buildings were a barbershop, a bank, M.E. South Church and Friendship Baptist Church, McGlaughlin Sorghum Mill, Anderson Grist Mill, Hilton Grist Mill, and Moses Brothers Stove Mill with twelve employees, and several stores, including a gasoline station. Also of interest was the tomato-canning factory. From around 1924 to 1932, "about everyone around Bloodland raised tomatoes" (York and York 1975: 158). During the construction of FLW the town exploded into a tent city for construction workers but it was closed as the installation developed. Today only one building and cemetery mark the largest village on the plateau.

Characteristic of the Ozarks, Pulaski County's educational system lagged a little behind the more "prosperous sections" of Missouri. For instance, in the 1930s many Ozark counties still were on an eight-month session. But the school year was not the only problem, from top to bottom, Pulaski County schools in the early twentieth century were little different from their predecessors. In the 1930s, Pulaski County had 61 schools, 53 of them had only one teacher. School population in Pulaski County remained fairly constant but dropping slightly throughout the early-twentieth century. In 1920 the school population was 3,432, in 1925 it was 3,340, and in 1930 it numbered 3,162. There were no public libraries in the county until around 1938 (Pulaski County Historical Society 1982). Although most schools on the interior plateau were one-room schoolhouses, the exception was Bloodland High School, a substantial two-story stone high school built in 1929 by the W.P.A. The Bloodland High School had recreational activities like chorus, folk dancing, glee club and sports (York and York 1975: 180).

Religion continued to play an important role in Pulaski County, and most of the churches established during the latter part of the nineteenth century existed throughout the early twentieth. New churches were established, and as the population grew only slightly, one must conclude that the older churches split into smaller congregations, shortening the distance members had to travel. Within Pulaski County, churches established after 1910 included the Calvary Baptist church (1929) at Devil's Elbow, the Pleasant Grove Christian Church (1918) in Laquey, the Cedar Bluff Baptist Church (1910) at Plato, the Palace Community Church (1930) at Palace, and the Bulah Baptist Church (1911) in Swedeborg (Ensminger 1934: 98).

In the early 1930s after nearly 120 years (1813 to 1933) of scattered American occupation on in the FLW region, the natural and cultural landscape was nearing exhaustion. Tenancy increased to twenty-eight percent of the farms in 1930 and would continue to climb to thirty-two percent in 1940. Farm labor wages between 1926 and 1933 dropped from \$1.25 to \$.50. A tie-hacker, who on average could make \$3.00 a day in 1926, could only make one dollar in 1933. In Waynesville and the railroad towns, waitresses' wages had dropped from \$1.50 a day to \$1.00. Skilled labor in Pulaski County had fallen as much as fifty percent between 1926 and 1934, and unskilled labor as much as forty-three percent. The number of registered unemployed persons in Pulaski County totaled 1,844 in 1933. Twenty-nine percent of the county was on relief and this amounted to, on a per month average, as many as 3,142 people. This figure was the highest in the northern Ozarks (Ensminger 1934: 142-143).

Topsoil erosion was a serious problem across the Ozarks and on the erosion had exacerbated soil infertility. Since initial settlement, the Ozark settlers had learned to rely on the abundance of the forests for their subsistence. However, much of the forest was gone and with it went the game population. By the 1930s it was almost impossible to maintain an Upland South subsistence lifestyle within the FLW region. However, Upland South self-reliance had served them well for many generations and for that reason there was great reluctance to change.

With the election of Franklin Roosevelt in 1932, northern Ozark problems became meshed with greater national problems. For the next seven years, until the army came and purchased some 71,000 acres of the plateau, independent Ozark subsistence farmers saw the infusion of federal agencies and personnel. Massive government programs were initiated in an attempt to bring relief to the nation. Those with the greatest impact on the plateau were the Agricultural Adjustment Act, the Enabling Act of the U.S Forest Service, the Civilian Conservation Corps and the Sub-Marginal Land Acquisition Program; all established in 1933 or shortly thereafter (Hofstadter et al. 1967: 720-724).

In 1933 the United States Forest Service (USFS) arrived on the plateau. The Mark Twain National Forest was born and one of the first tracts purchased was the Gasconade Unit taking some 33,842 acres in Pulaski County. In conjunction with the efforts of the USFS land purchases many of the other programs were instituted. For instance, the Agricultural Adjustment Act paid farmers to withdraw acreage from production and the Sub-marginal Land Acquisition Act allowed the Department of Agriculture to purchase poor lands in order to retire them from use preventing further erosion. The USFS moved quickly to achieve the goals of retiring the submarginal lands, relocating families on these lands to better farmland, offering part-time employment to people needing jobs, and providing loans to subsistence families in need (Malouf 1991: 5).

One of the most productive programs in association with the USFS was the conservation effort of the Civilian Conservation Corps. In the FLW region there were at least two camps, one at Palace and another north of Bloodland and another, called Blooming Rose just across the Big Piney in Phelps County (Happy Days CCC Directory n.d.). The impact of the C.C.C. and the Forest Service on the landscape was significant. Workers built and improved many miles of road as well as fire towers at Wharton and Bloodland. They constructed telephone wires, built and repaired bridges, and planted trees. The USFS took additional action for landscape recovery by re-establishing deer and turkey populations. The USFS claimed that the annual burning by farmers was depleting the cover and food for small game. They instituted wildlife plots to increase forage. Ponds were constructed. A grazing policy was instituted. Permits were issued to select local farmers allowing them to graze cattle, hogs, goats, and sheep (Mark Twain National Forest Local History Collection).

In terms of material culture, the families in southern Pulaski County probably were typical of the entire Upland South during the Depression. Of the families studied, only eight percent had a net worth of over \$5,000.00, and twenty-nine percent had property worth more than \$1,000.00. But most of this wealth was land. When their land was excluded, this percentage dropped to fourteen percent. Over seventy percent of the families surveyed had less than \$10.00 cash on hand at the time of the survey, and sixty-four percent had gross annual incomes of less than \$500.00. Still, some forty-five percent of the families had automobiles and an approximately equal number had radios. Despite the Depression, though, there were people in the area who had solid incomes, and were living well compared to the rest. For instance, those that owned farms, in contrast to those owned no property, had gross incomes exceeding \$500.00 (Mussan 1941: 66-67).

While the above statistics would seem to paint a depressing picture, the indomitable spirit of Upland South people remained unbroken. In direct contrast to the landscape, the words of the people during this time speak of a life of contentment and bounty. To the people living there, the land was full of resources like timber and game, allowing the residents to live a good life, with everything that one needed. Despite the problems and real hardships of living on the depleted landscape, they did not want to move.

On October 1, 1940, the Army officially announced that it was going to purchase 65,000 acres in southern Pulaski County. The occupation was rapid and thorough. Planning teams arrived as early as November 1940 and land purchases were actively being concluded by Christmas. Laborers flooded the plateau and the first earth was turned on December 11<sup>th</sup>. Incredibly, four construction firms planned and completed the entire six square mile cantonment area containing 1,600 buildings in seven months. Over 52 miles of vitreous and concrete tile were laid for sewers, 58 miles of roads, and 75 million board feet of lumber were used. A railroad line was also built to the fort (Beemer 1976: 20; Mays 1941: 12-13). At the peak of construction, some 30,775 workers were camped within a fifty-mile radius of the fort. At the peak of the

boom in 1942 and 1943, Waynesville leaped to a population of 12,000—nearly 30 times the pre-war census" (Kimbrough 1946).

In summary, this historic overview is partially based on a context report (Smith 1993), which was a landscape approach for evaluating historic sites discovered during archaeological survey. Such historical contexts assist in managing and preserving archaeological sites that best represent the full range and variety of the area's culture history. Besides identifying distinct chronological changes to the landscape as regional settlement progressed and using these landscapes to identify a historic context, we have defined a unifying cultural theme (Upland South Traditions) describing the region, its people, and their historic resources. Throughout we have stressed the natural and cultural landscape and how the northern Ozarks fits into the larger picture of American History. This approach has created many layers of research that focuses on how frontier and backcountry settlements changed through time. New research that emphasizes the Civil War, transportation, agriculture, tie-hacking, people, the Depression and landscape changes have been incorporated into the new historic context statement, from which this overview was adapted. Ultimately, the historic context and overview will assist in the overall management of historic cultural resources.

### **2.3.20 Pre-World War II Mobilization (Pre-1940)\***

Approximately 65,000 acres were acquired for the installation of FLW, resulting in the elimination of the rural communities of Cookville, Moab, Tribune, Warton, Wildwood, and Bloodland. Numerous habitation sites and farmsteads were also vacated and razed. Although various family and county histories have chronicled the life of these communities Smith's (2000) context study is the first study to examine the entire FLW region including these towns. Nevertheless the obliteration of settlements in 1939 and 1940 was very thorough and only two buildings were spared: Rolling Heath School House, and a house in the range area that is used for storage (**Figure 2.11**). The most logical conclusion was that the two buildings that were spared involved individual situations and not a particular policy of the Army.

### **2.3.21 World War II Mobilization (1940-1946)**

FLW was constructed under provisions of the United States Army Expansion program of 1940, a time when it seem inevitable that the United States would become involved in the war raging in Europe. As the conflict deepened, America needed to prepare for probable entry into the war against Germany. In response to that possibility, the United States Army looked to the Ozark foothills of south-central Missouri to build a major Army training camp to prepare men for the battlefields of Europe, North Africa, and the Pacific.

Construction began on December 3, 1940 with an emphasis on housing and training facilities for the soldiers. On April 10, 1941, the post received 10,000 soldiers, and by summer 16,000 more had arrived. The title of Engineer Replacement Training Center (ERTC) was added to the mission of FLW, to train engineer replacement soldiers and Army ground and service force units. The remaining facilities of the approximately 1,600 buildings of WW II mobilization wooden structures were ready and occupied on May 30, 1941. All of the WW II mobilization era buildings at FLW were constructed from standard mobilization plans. The only common alteration to standard mobilization drawings in constructing FLW's 1600 mobilization buildings was adapting the height of footings to the rolling topography. Minor variations in the pattern of building arrangements were made in order to adapt to the terrain. The natural features of the site—its rivers, cliffs, hills, and forests—provided an exceptional environment for military engineering training. The Sixth Infantry Division moved from Fort Snelling, Minnesota, to FLW for its training in June of 1941. By the end of 1941, 32,000 soldiers were stationed at the post, and the nearby town of Waynesville had experienced unprecedented growth (Niquette 1983). The 1,600-building

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\* Information in the next four sections was taken from the *Fort Leonard Wood Historic Preservation Plan*, 1992 and the *Historic Context Statements for Cantonment Areas Located on Headquarters Training and Doctrine Command Installations*, 1999.

installation was designed for a capacity of 45,000 soldiers. During the first six months of 1943 a daily average of 40,000 soldiers trained in engineering, ordnance, quartermaster, medical, chemical, military police, armor, artillery, and postal skills. The FLW population peaked at 56,000 (Smith 1998).

On December 18, 1942 the main prisoner-of-war (POW) camp was constructed which housed 3,000 German and Italian prisoners (HBA 1987). Public opinion influenced the decision to locate POW camps farther away from settled areas and to use their labor only when civilian labor was unavailable. Many of the German soldiers were captured in Africa and were members of the well-known Afrika Corps. Housing POWs, like mobilization construction, was based upon standardized plans. Each facility included prisoner barracks, guard barracks, administration buildings, a warehouse and utility area, hospital compound, and a recreation area all within a stockade guarded by watchtowers. The peak POW population occurred in June 1945 at 5,187 prisoners. The use of branch camps for up to 2,000 POWs kept the base camp within the 3000-POW design capacity. The POW confinement area, which was located immediately south of the airfield, had three 1,000-prisoner compounds divided by barbed-wire fence. The POWs were housed in single-story buildings with tent roofs.



**Figure 2.12:** The German POW Stonework outside the Black Officers' Club (courtesy Joe Proffitt, Natural Resources Branch, FLW).

A physical legacy of this period is the numerous native stone retaining walls, sidewalks, and drainage structures built by the POWs, many of these structures still exist today and comprise a vital component of the installation's historical resources (Burt et al. 1998) (**Figure 2.12**). The large number of POW constructed structures results

from a unique set of circumstances. FLW's geology includes several types of sandstone, chert, and fine river gravel. FLW's gently rolling to moderately steep topography created the need for many small drainage structures around the standard mobilization buildings. With the material available and a need for drainage structures, retaining walls, and sidewalks, the arrival of over 3,000 POWs provided a large, young, hardworking, and available labor pool.

By 1946, WW II was over and on March 23, training halted and FLW was deactivated.

### **2.3.22 Beginnings of the Cold War (1946-1956)**

The end of World War II brought an abrupt change with the closing of FLW on March 31, 1946. The entire post—all 100 square miles—was then leased by an Oklahoma rancher. Thousands of head of cattle grazed where formations of soldiers trampled not long before. The post remained on inactive status until August 1, 1950, when it was reactivated during the Korean conflict. The first soldiers arrived for training one month later. FLW performed an engineer replacement training role, providing basic infantry, advanced engineer, and engineer specialist training. FLW's role as an Army reception station began in 1953. With the passage of the Reserve Forces Act in 1955, the post's role as a training center grew once more. FLW took on yet another new title on March 16, 1956 when it was redesignated the United States

Army Training Center, Engineer. Five days later, the Secretary of the Army declared FLW a permanent installation.

### **2.3.23 Permanent Installation (1956-Present)**

The change in status to a permanent installation did not change the FLW's training mission, but it did allow the government to start building permanent structures. In the fall of 1956 a building boom began with the construction of thirty-three desperately needed family quarters. This was quickly followed by another billeting project the following spring; the first permanent soldier housing facility went up in the summer of 1958. Between the years 1958 and 1961, 2,829 new units were constructed. Other major additions included a chapel, schools, the General Leonard Wood Army Community Hospital in 1965, a theater, bachelors enlisted and officer quarters.

The Vietnam conflict increased the number of soldiers stationed at the installation and accelerated building and facility improvements that continue today. Activity peaked in 1967, when post personnel trained about 123,000 soldiers. A group of temporary metal barracks was erected at FLW as a result of the Vietnam War. The trend in permanent construction has been to build larger buildings than the mobilization-type buildings. These larger, permanent community buildings are located in concentrated commercial and service areas. By 1972, most training was operating from permanent facilities. Of the 1,600 mobilization-type wooden buildings constructed between December 1940 and May 1941, some 600 buildings remained as of 1987. In recent years demolition of temporary buildings has accelerated and has been concentrated in the eastern portion of the cantonment area.

As a Training and Doctrine installation (TRADOC), FLW expanded its training role in 1975, with a construction equipment operator training course for United States Air Force and Marine Corp personnel. Combat engineer One-Station-Unit Training began the following year. While engineers had trained at FLW for many years, it was not until February 1985 that the Secretary of the Army decided to move the United States Army Engineer Center (USAEC) to Missouri from Fort Belvoir, Virginia. By the winter of 1989, the USAEC began moving into the newly built school complex. As a result, FLW is the center for developing new engineer doctrine and equipment for tomorrow's battlefields. FLW also trains enlisted and officer personnel in basic combat, military engineering, and motor vehicle operations. In 1996, the Interservice Training Review Organization Program was instituted and in 1999, the fort's mission expanded to include the Army Chemical School (USACS) and Military Police School (USAMPS) and is now the Maneuver Support Center (MANSCEN).

MANSCEN is one of the most advanced and sophisticated military training centers in the world. It is also the Joint NBC Defense Training Center because the Army, Navy, Air Force, and Marines all conduct their NBC defense training, professional development training, and technical courses at MANSCEN. Annually, over 6,000 military and civilian personnel from throughout the Department of Defense, state and federal agencies, and numerous foreign nations attend specialized courses at MANSCEN. Educating and training personnel in NBC defense, reconnaissance, protection, and large-area smoke operations are the mainstay of the school's mission. MANSCEN trains and provides disciplined, motivated, physically fit, technically and tactically proficient Military Police soldiers, inculcated with the Army values, for assignment to units worldwide, capable of immediately contributing to their unit's mission and able to survive in any environment they might face.

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### 3.0 PLANNING LEVEL SURVEY

This section is essential in documenting cultural resource inventory and evaluation work at FLW. A summary of all cultural resource projects that produced a report is provided in a concise table. The environmental and cultural overview in conjunction with the table and bibliography constitutes and extensive literature review. The summary of recent cultural resource projects provides legal, stewardship, and military requirements that compatible with the Army's mission at FLW. This section also includes a description of each resource type (archaeological, potential sacred sites, historic buildings and structures, and historic landscapes). It contains descriptions of projects completed for each resource area, a description of the work, and references. The purpose is to identify existing management efforts in order to determine future requirements in the cultural resources program.

#### 3.1 Previous and Ongoing Research at Fort Leonard Wood (1922-2001)

The following is a summary of cultural resource activities conducted at FLW since 1922. The majority of projects were conducted between 1992-2001. Cultural Resources Management personnel and projects were administered through an agreement with the Environmental Division, FLW, the U.S. Army Construction Engineering Research Laboratory (CERL), and the Department of Anthropology American Archaeology Division, University of Missouri, Columbia. It should be stressed that although these projects will be described from a cultural resources management perspective, they were designed with an inter-disciplinary approach that incorporated archaeological, biological, historical, geomorphological, and data base development in their framework. The projects described below were conceived and administered at the Environmental Division, FLW.

Most projects were accomplished with environmental compliance funding. During the years 1992-1997, a few projects were funded through the Legacy Resource Management Program (LRMP). In addition to the work described below, numerous small surveys, literature searches, GIS data base development, archaeological site monitoring and liaison work comprised historic preservation activities conducted by the cultural resources manager and personnel within the Natural Resources Branch, FLW. These efforts, although not described below constitute an important part of cultural resources management at any installation. The following literature review presented in **Table 3.1** has been drawn from various reports (Ahler et al. 1995, 1996, 1997, 1999; 2000; Albertson et al. 1995; Ahler and Albertson 1996; Childress and Weaver 1998; Edging 1996; Harlan Bartholomew and Associates 1987, 1992a-b; Kreisa 1995, 1999; Kreisa et al. 1996; 2000; Markman 1993; Niquette et al. 1983; Smith 1993, 1998, 2000; Yelton and Edging 2000) conducted at FLW since the 1920s.

##### 3.1.1 Cultural Resources Inventory

For a summary of site types, site function and site contents, and their chronological placement see the cultural overview above. Cultural Resource Surveys have now totaled 52,671 acres (84%) of the installation (**Figure 3.1**). To date, 562 archaeological sites have been recorded within installation boundaries. Of these, 352 are prehistoric and 169 are historic (**Figures 3.2-3.3**). Twenty-three sites contain both prehistoric and historic remains. Of the 562 total sites, 279 (51%) are eligible or potentially eligible to the National Register of Historic Places (NRHP) (**Figure 3.4**) and should be afforded protection under the National Historic Preservation Act. The maps shown are intentionally constructed at a scale to show the entire base and are used for illustrative purposes. If needed, enlargements of particular areas within FLW can be made at the Natural Resources Branch Office. The maps reveal that significant sites tend to cluster along the Big Piney River in the eastern part of the installation and along Roubidoux Creek in the NW and SW portion of the installation. This should alert any planners or military commanders that these areas have significant and potentially significant archaeological sites.

**Table 3.1:** Summary of Archaeological and Historic Investigations at FLW, Missouri (Based on Childress and Weaver 1998:23; Edging and Lohraff 2000).

Reference	Institution	Description (Site No., Cultural Resource Zone, Investigation Type.)
Kreisa and McDowell 2001	UIUC	Phase I Archaeological Survey of 996 Acres with 17 previously unrecorded sites located on Musgrave Hollow and Smith Branch.
Ahler et al. 2002	ISMS/UIUC FLW	Archaeology of the Northern Ozarks: A Study in Marginality. A prehistoric context statement that synthesizes the prehistoric archaeology of FLW (in progress).
Smith 2001	USC/CERL/FLW	Made it in the Timber: Landscape and Life in the Northern Ozarks. A historic context statement that chronicles the history of FLW Region from 1800-1940.
Yelton and Edging 2000	CERL/FLW	Cultural Affiliation Overview and Epilogue that provides extensive archaeological, historical and linguistic evidence as a NAGPRA document.
Ahler, Kolb, and Edging 2000	ISMS	Developing and Testing Predictive Models for Stratified Archaeological Sites with 14 sites found across the installation.
Kreisa et al. 2000	UIUC	Phase II NRHP Testing at the Lohraff Complex (23PU731, 23PU739, 23PU745), Upper Roubidoux area.
Kreisa 1999	UIUC	Phase I Survey of 1000 acres with 14 newly recorded sites located in the Upper Roubidoux and Interior Uplands.
Kreisa and Adams 1999	UIUC	Phase I Survey of 3500 acres with 36 newly recorded sites within the Upper Roubidoux and Interior Uplands.
Ahler et al. 1999	ISMS/WES	Phase II NRHP Testing and Remote Sensing at Seven Sites within the Big Piney (23PU554, 23PU556, 23PU607, and 23PU683) and the Upper Roubidoux areas (23PU614, 23PU719, and 23PU721).
Smith 1998	USC	Historic Context Statement and Stonework Evaluation for the WWII Black Officers' Club. Funded by the LRMP.
Ahler et al. 1998	WES	Phase II NRHP Testing at the Ramsey Complex of Sites (23PU58, 23PU554, 23PU565, and 23PU567) Big Piney area.
Primm 1998	CERL	Oral History of Historic Settler Communities of FLW and Surrounding Areas.
Yelton 1998	Yelton Consulting	Cultural Affiliation Overview for NAGPRA at FLW.
Childress and Weaver 1998	Brockington & Assoc.	NRHP Phase II Testing: Upper Roubidoux Creek (23PU264, 23PU354, 23PU458, and 23PU483).
Adams 1997	UIUC	Phase I Survey: Survey of 3,000 acres with 41 previously unrecorded sites on the Big Piney River and Roubidoux Creek.
Ahler and Albertson 1996	ISMS/WES	Field test of the predictive models for prehistoric site location developed by Ahler (1995) and Albertson et al. (1995); Survey: 11 previously unrecorded sites and located in the Upper and Lower Roubidoux, and Big Piney areas. Funded by the LRMP.

Reference	Institution	Description (Site No., Cultural Resource Zone, Investigation Type.)
Kreisa et al. 1996b	UIUC	NRHP Phase II Testing: Big Piney (23PU58, 23PU452, 23PU594), Upper Roubidoux (23PU421, 23PU424, 23PU468, 23PU481, and 23PU485)
Kreisa et al. 1996a	UIUC	Phase I Survey of 3500 acres with 39 newly recorded sites located in the Interior Uplands, Upper and Lower Roubidoux, and Big Piney areas.
Bennett et al. 1996	Arch. Assess. Inc./WES	A GIS Pilot Study for Euro-American Cultural Resources: FLW.
McGowan 1996	UIUC	Phase I Survey: Survey of 4000 acres with 21 newly recorded sites located in the Lower Roubidoux and Interior Uplands.
McGowan et al. 1996	UIUC	Phase I Survey of 4000 acres with 37 newly recorded sites were located in the Interior Uplands, Upper Roubidoux, Big Piney, and Cantonment Areas.
Edging 1996	FLW	The Natural/Cultural Interpretive Center at Rolling Heath School. The history and rehabilitation of the Rolling Heath School House. Funded by the LRMP.
Albertson et al. 1995	WES	Soil geomorphological mapping of landforms in the Roubidoux and Big Piney drainages. Funded by the LRMP.
Ahler 1995	UIUC	GIS Predictive site locational modeling based on known site location data and generalized geomorphic/geologic contextual data. Funded by the LRMP.
Ahler et al. 1995b	UIUC	Phase II NRHP Testing: Big Piney region; Miller Cave Complex, (23PU2, 23PU235, 23PU255). Funded by the LRMP.
Ahler et al. 1995a	UIUC	Phase II NRHP Testing: Big Piney (23PU172, 23PU173, 23PU235, 23PU255, 23PU361, 23PU368), Upper Roubidoux (23PU248, 23PU249, 23PU265, 23PU370, 23PU371, 23PU420), Interior Uplands (23PU205, 23PU291, 23PU295).
Kreisa 1995	UIUC	Phase II NRHP Testing: Big Piney (23PU288, 23PU457, 23PU556), Upper Roubidoux (23PU251, 23PU426, 23PU482, 23PU492).
Smith 1993	Markman & Associates	Made It In The Timber: A Historic Overview of the FLW Region (1800-1940).
Markman 1993	Markman & Associates	Phase II NRHP Testing: Big Piney, 23PU2 (Miller Cave).
Ahler and McDowell 1993	UIUC	Phase I Survey of 2000 acres with 43 newly recorded Big Piney, Upper Roubidoux and Interior Uplands.
Markman and Baumann 1993	Markman & Associates	Phase I Survey of 4800 acres with 39 newly recorded sites recorded in the Lower Roubidoux and Interior Uplands.
Baumann and Markman 1993	Markman & Associates	Phase I Survey of 2200 acres with 12 newly reported sites located in the Interior Uplands.
HBA 1992	HBA	Historic Preservation Plan.
HBA 1992	HBA	Installation Building Survey (Includes PreWWII, WWII buildings, and WWII era Stonehenge)

Reference	Institution	Description (Site No., Cultural Resource Zone, Investigation Type.)
		and WWII era Stonework).
McNerney 1992	ARG, Ltd.	Phase I Survey of 1700 acres with nine sites located in the Lower Roubidoux and Interior Uplands.
McNerney and Neal 1992	ARG, Ltd.	Phase I Survey of 1700 acres with three newly recorded sites in the Big Piney and Interior Uplands.
Moffat et al. 1989	ARG, Ltd.	Phase I Survey of 2400 acres with 25 newly recorded sites in the Big Piney, Lower Roubidoux and Interior Uplands.
HBA 1987	HBA	Cantonment Historical Resources Survey (World War II era German POW Stonework and Context Report).
Klinger and Cande 1985	Historic Preservation Associates	Phase I Survey with 10 newly recorded sites located in the Interior Uplands.
Purrington 1985	SWMS	Phase I Survey with 34 newly recorded sites located in the Lower Roubidoux and Interior Uplands.
Niquette 1984	Cultural Resource Analysts, Inc.	Phase I Survey with 33 newly recorded sites located in the Lower Roubidoux, Big Piney and Interior Uplands.
Niquette et al. 1983	Environment Consultants, Inc.	Phase I Survey with 53 newly recorded sites in the Big Piney, Upper and Lower Roubidoux and Interior Uplands. Phase II Testing of 14 sites in the Lower Roubidoux area.
Purrington 1983	SWMS	Phase I Survey with two newly recorded sites located in the Interior Uplands.
Perttula et al. 1982	SWMS	Phase I Survey with two newly recorded sites located in the Interior Uplands.
Fraser et al. 1981	ARG, Ltd.	Phase I Survey 17 newly recorded sites located in the Upper and Lower Roubidoux, Big Piney and Interior Uplands.
Purrington & Turner 1981	SWMS	Phase I Survey with two newly recorded sites in the Interior Uplands.
Hargis n.d.a, b (1980s)	FLW	Phase I Survey with 46 newly recorded sites located in the Upper Roubidoux and Interior Uplands
Garrison 1976	UMC	Phase I Survey: No sites in a air-to-ground weapons range.
Fowke 1922	Smithsonian	Intensive excavations in the front portion of Miller Cave (23PU2). Additional investigations at several caves in Pulaski County.

UIUC-Public Service Archaeological Program, University of Illinois at Urbana-Champaign

ISMS-Illinois State Museum Society

UMC-University of Missouri, Columbia

CERL-U.S. Army Construction Engineering Research Laboratories

WES-U.S. Army Waterways Experiment Station

At FLW, 70 prehistoric sites including caves, rock shelters, cairns, petroglyphs (rock art), open-aired bluff top alluvial base camps, and small lithic scatters are eligible for the NRHP. Cave sites, and many of these site types, served several functions through time from intense habitation sites to specialized hunting and processing stations.

Within the 169 historic database, that includes towns, churches, schools, farmsteads, and cemeteries, several have received eligible or potentially eligible NRHP status. Although formal Phase II NRHP testing is needed on historic sites such as farmsteads, five sites have been considered as NRHP eligible due to the lack of disturbances, intact foundations, and/or archival research.

Potentially Eligible National Register (PENR) sites need further investigation to support a NRHP designation. Verification of NRNP status is most often in the form of Phase II archaeological testing. The classification of PENR as an NRHP category has recently been dropped by the MSHPO (December 1999); however, its use is still essential to our phased protection of cultural resources.

The remaining 265 sites in the site file database are classified as Not Eligible for the NRHP (NENR). These sites were given this classification after intensive archaeological survey or Phase II testing investigations. A determination of not eligible indicates the site is not afforded protection under cultural resource laws, and no further archaeological work is needed. Nevertheless, all sites are included in our database and can be used for settlement studies. Isolated artifacts found across the installation are not assigned site numbers but their type and location is included in a GIS database file.

### 3.1.2 Phase I Archaeological Survey

Since 1992, the Environmental Division and CERL have contracted the survey of large timber sales and training areas as a proactive approach to inventory and evaluate the entire installation (HPP 1992:77). With the close of FY2001, 84% (52,671 acres) of the installation has been surveyed for cultural resources including the cantonment and cannon range (See **Table 2.1**) (See **Figure 3.1**). Additional surveys will continue through FY2006. Several reports that document survey results conducted during FY1991-2001 are available upon request (See Adams 1997; Ahler and McDowell 1993; Kreisa et al. 1996; Kreisa and Adams 1999; Kreisa 2000; McGowan et al. 1996a-b). Since 1992, each survey has employed intensive survey methods designed to find more sites, determine more accurately the limits of sites when found, and record the stratigraphy of sites. Field data derived from archaeological survey has enabled us to determine with a great amount of certainty whether a site is potentially eligible or not eligible. Our predictive and geomorphological projects have shown that alluvial settings are much more complex than the uplands, therefore, survey methods have been designed to address this complexity (Albertson et al. 1995; Ahler and Albertson 1996; Ahler et al. 2000). Utilizing geomorphological and archaeological data, field strategies target specific landforms that have a high probability of containing buried sites. Certain landforms such as alluvial fans, terraces, and floodplains often require deeper testing, therefore, each archaeological survey statement of work contains an appendix that defines the appropriate survey techniques for each allostratigraphic unit or landform (**Table 2.1**).

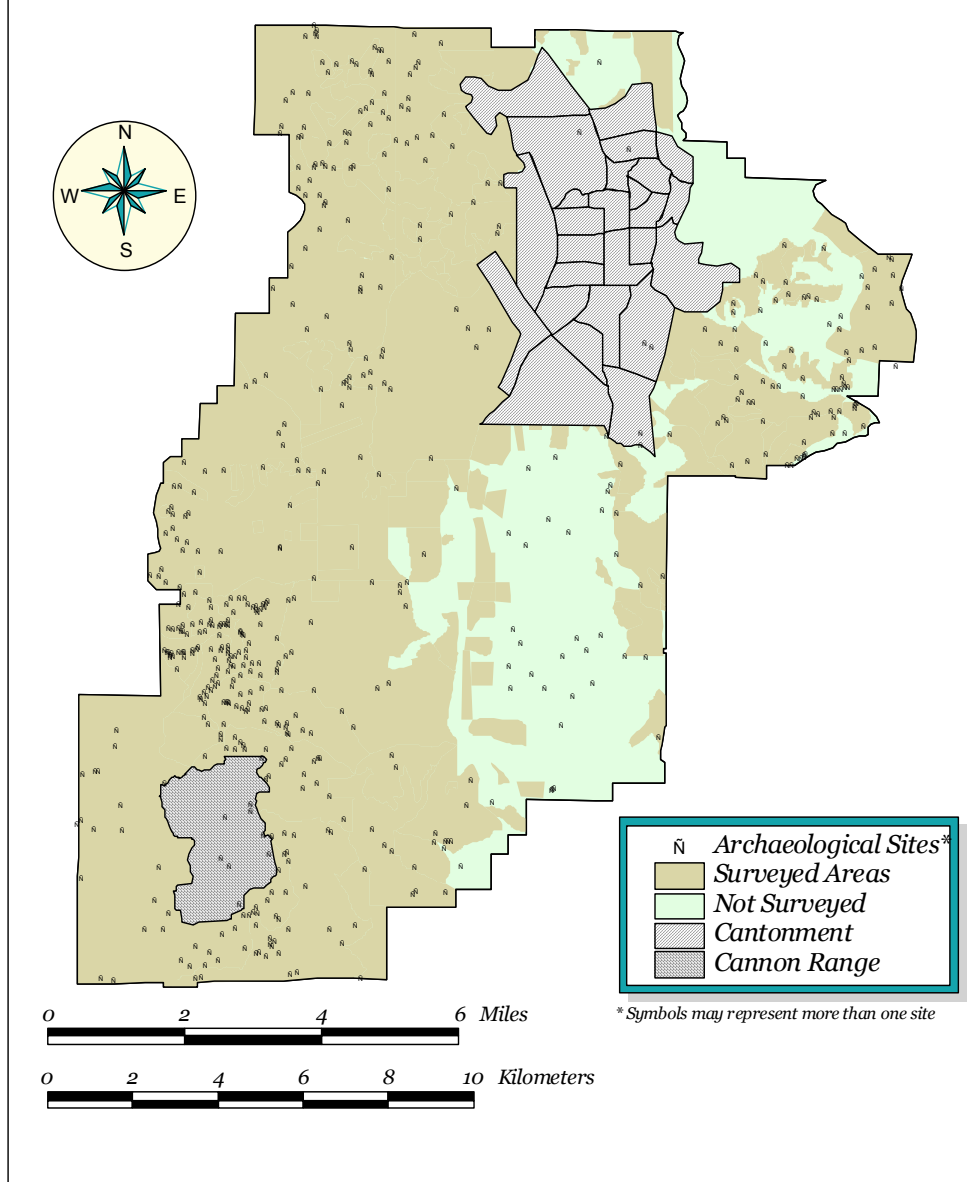
### 3.1.3 National Register of Historic Places (NRHP) Testing Project

Beginning in 1992, the Phase II NRHP Testing project was designed to comply with NHPA, ARPA and NAGPRA while retrieving important scientific data (Ahler et al. 1995, 1996, 1997, 1998, 1999; Childress and Weaver 1998; Edging and Kriesa 1996; Kreisa 1995, 2000; Kreisa et al. 1996). The Environmental

Division and CERL have contracted investigations at 62 sites, and of these, 47 (75%) have been deemed

# Fort Leonard Wood

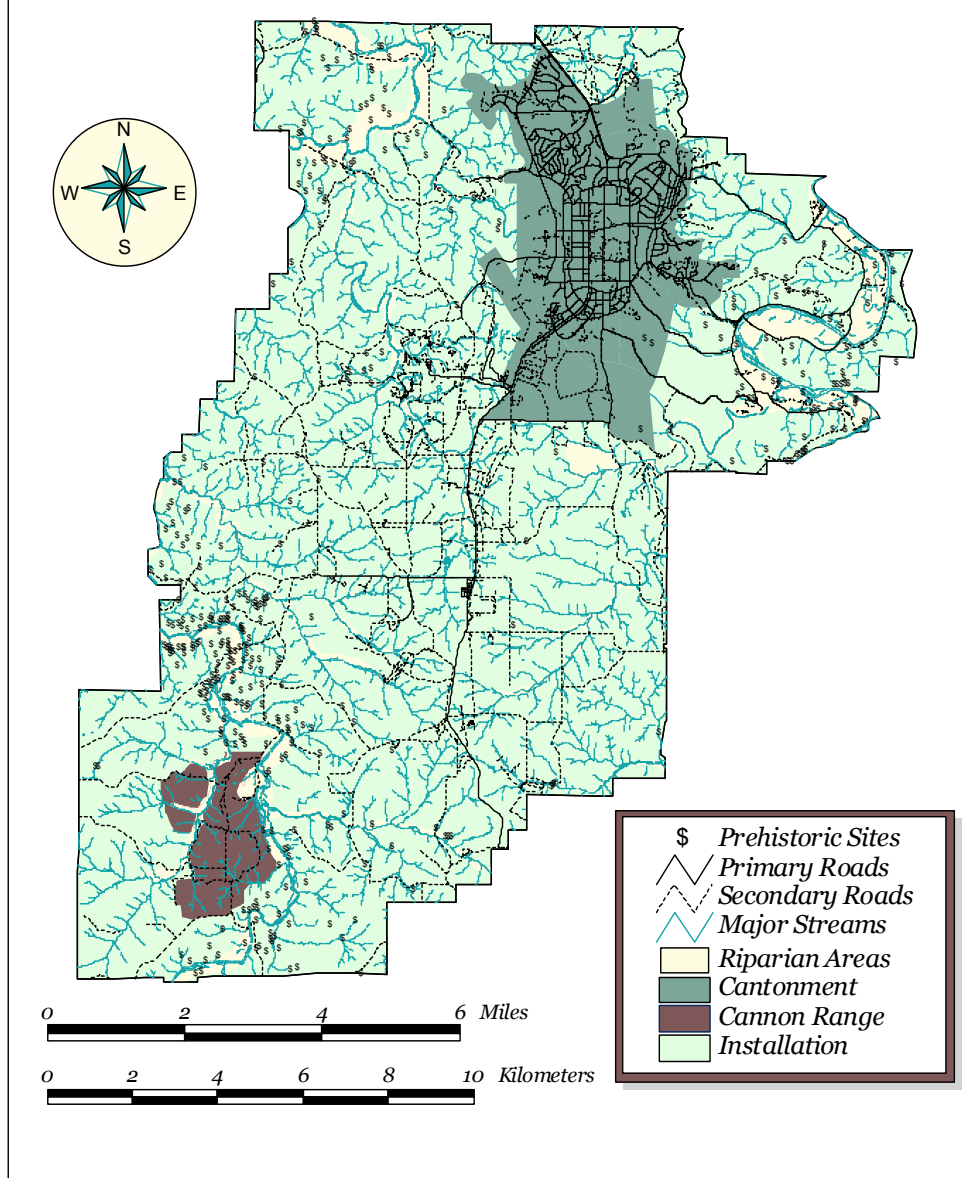
## ❖ *Surveyed Areas and Archaeological Sites* ❖



**Figure 3.1:** Surveyed Areas and Archaeological Sites (Data Current as of FY2001).

# Fort Leonard Wood

## ❖ Prehistoric Archaeological Sites ❖

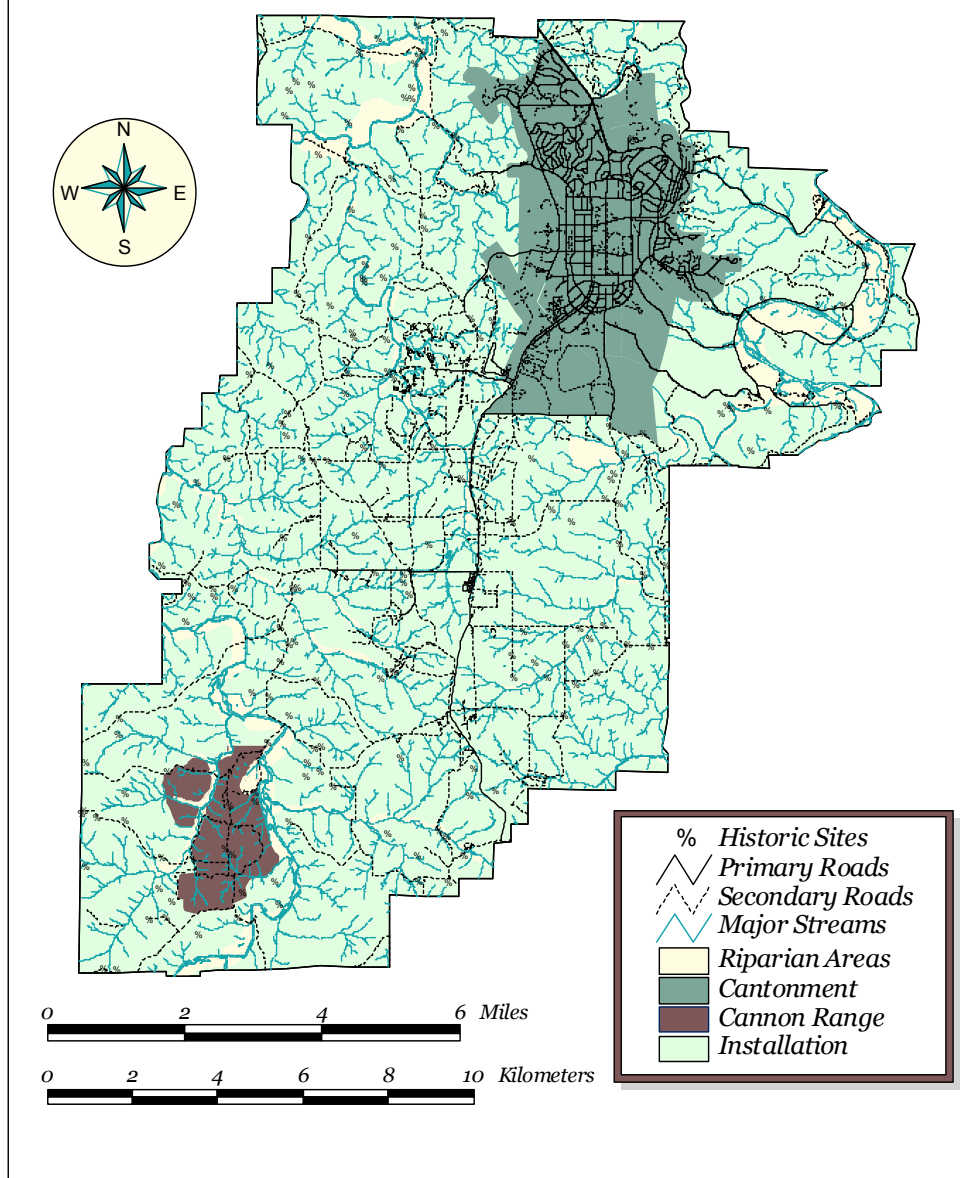


**Figure 3.2:** Prehistoric Archaeological Sites.



# Fort Leonard Wood

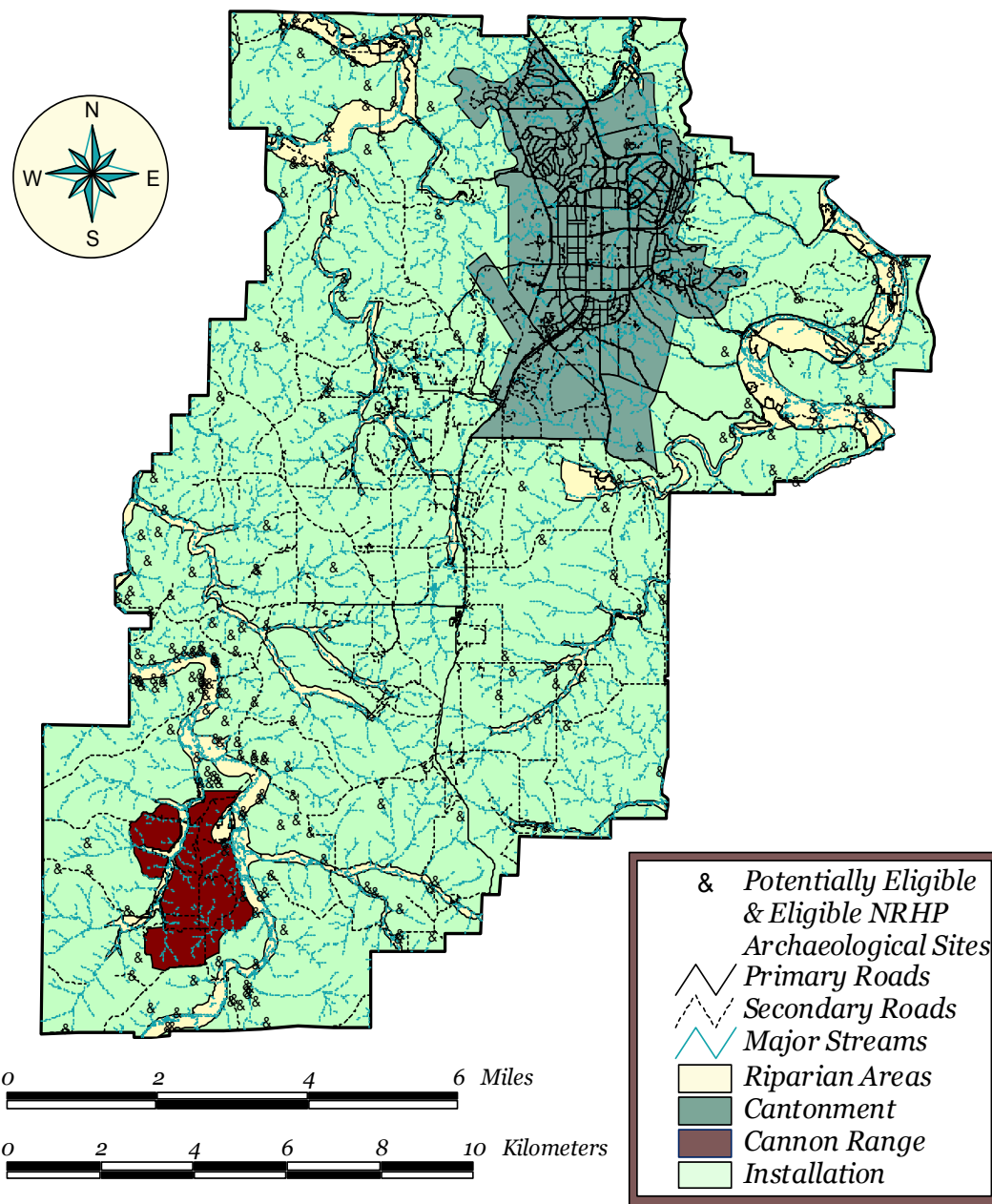
## ❖ *Historic Archaeological Sites* ❖



**Figure 3.3:** Historic Archaeological Sites.

# Fort Leonard Wood

❖ *Sites Eligible for the National Register of Historic Places (NRHP)* ❖



**Figure 3.4:** Sites Eligible for the National Register of Historic Places.

eligible to the NRHP. In 1993, the NRHP program began a long-term effort to evaluate, manage, and protect site complexes. To date, the Miller, Ramsey and Lohraff Complexes have been investigated. While no cultural resources' funding was available for NRHP testing in FY1999 or 2000, the FY1998 testing year focused on 23PU739 (Lohraff Rockshelter), 23PU745, a large lithic scatter and 23PU731, a small basecamp located on an alluvial terrace below the cave and rockshelters (Kreisa 2000). These and four other sites form the Lohraff Complex (Edging and Ahler 2000). Renewed funding in FY2001 is aimed at NRHP testing of stratified sites located during the Stratified Sites Project (Ahler et al. 2000) and the NRHP Testing of sites threatened by military impacts. The main focus of the latter project is to determine eligibility of sites in the Sapper Area and the proposed Land Interchange Areas currently known as the Joint-Use Area.

### **3.1.4 Curation Plan (36 CFR 79)**

A Curation Plan that complies with 36 CFR 79, the curation of federally owned archaeological collections, has been underway between the Environmental Division, CERL, and the University of Missouri, Columbia since 1995. During this time, over 70% of all artifacts in the collections and all NAGPRA related human remains and funerary objects have been processed and are permanently housed at the U.S. Army Corps of Engineers facility at the University of Missouri, Columbia. The Department of Anthropology American Archaeology Division and the Archaeological Survey of Missouri administer this facility. This institution has in place curatorial methods as directed by recent DoD and U.S. Army Corps of Engineers (ER 1130-2-433) guidelines. The FLW curation plan is a cost-effective effort that complies with federal regulations, while ordering the collections for scientific study in a state-of-the-art facility. All archaeological projects that will generate collections must adhere to basic standards of processing and curation as defined in each statement of work prior to the beginning of each project. After analysis, all material is transported to CERL where it is examined prior to its shipment to the University of Missouri, Columbia.

### **3.1.5 Monitoring**

A systematic attempt to monitor archaeological and endangered species sites began in FY1997 and continued in FY2001. While some monitoring has taken place as early as 1992, this project marks the first systematic attempt to monitor sites across the installation. Within two month's time, 10 clusters of sites deemed eligible or potentially eligible to the NRHP, and at risk due to vandalism and military impacts, are visited. Often these clusters represent both significant archaeological and biological inventory sites. Any disturbances are recorded to assess immediate and long-term effects of looting and/or military activity. This data is essential in creating GIS data layers of ARPA or endangered species violations through time. For example, in FY1997 two ARPA violations occurred on the installation. Violations can be targeted and revisited more frequently. If needed, site protection measures like cave gates been constructed at 23PU235 (Sadies Cave), 23PU302 (Kilman Cave) and 23PU744 (Lohraff Cave). Electronic monitoring devices have not been used but have been considered. Five endangered species bat sites in archaeological caves, as well as other plant and animal species on state and federal lists are also documented during the monitoring round (**Figure 3.5**)

### **3.1.6 GIS/ARCVIEW**

In FY2001, the Environmental Division utilized the ARCVIEW GIS system to update a cultural resource database. The database is accessible to in-house Natural Resource professionals. The inventory of all archaeological sites is updated annually in an EXCEL spreadsheet and as several GIS map layers. All archaeological sites by location and type and variables such as cultural affiliation, site size, and NRHP status are included in this database. Previous archaeological surveys and the location of ENR and PENR sites as shown above are extremely important GIS layers. Natural resource map layers such as topo lines,

streams, geology, soils, slope, timber sales, firebreaks, endangered species, wildlife plots, roads, elevation, training areas, and disturbed soils are compatible layers. From this database, the Environmental Division has constructed a working inventory of eligible and potentially eligible sites. This in turn has been used to create an environmental overlay for use by land managers and military planners (**Figure 3.5**). This database was also used to construct a probability model for the location of archaeological sites. This model has been revised to locate cave and alluvial sites across the FLW landscape (Ahler et al. 2000).

### 3.1.7 Geomorphological/Predictive Model Research

One aspect of the CRM Program at FLW involves combined geomorphic and archaeological modeling. In 1993, the late Dr. Paul Albertson (WES) began systematic investigation of alluvial terraces essential for constructing a geomorphic history the Big Piney River and Roubidoux Creek. The publication *Geomorphic Evaluation of Fort Leonard Wood* that resulted from this work described typical soil characteristics and detailed 1:12,000 scale maps of the distributions within the installation of ten major soil-geomorphic alloformations and numerous constituent allomembers. In that same year, Ahler (1995) constructed an initial predictive model from prehistoric site locations linking various soils, topographic, and landform attributes with specific site types (cairns, caves/rock shelters, and open-air sites. In a follow-up study, Ahler and Albertson (1996) used the soil-geomorphic maps to test and refine the initial predictive model by developing additional predictions regarding near-surface and buried site potential for each of the major soil-geomorphic alloformations (see **Table 2.1**). These results have been used to construct survey methods appropriate for each of these alloformations, permitting more effective documentation of cultural resources on the installation.

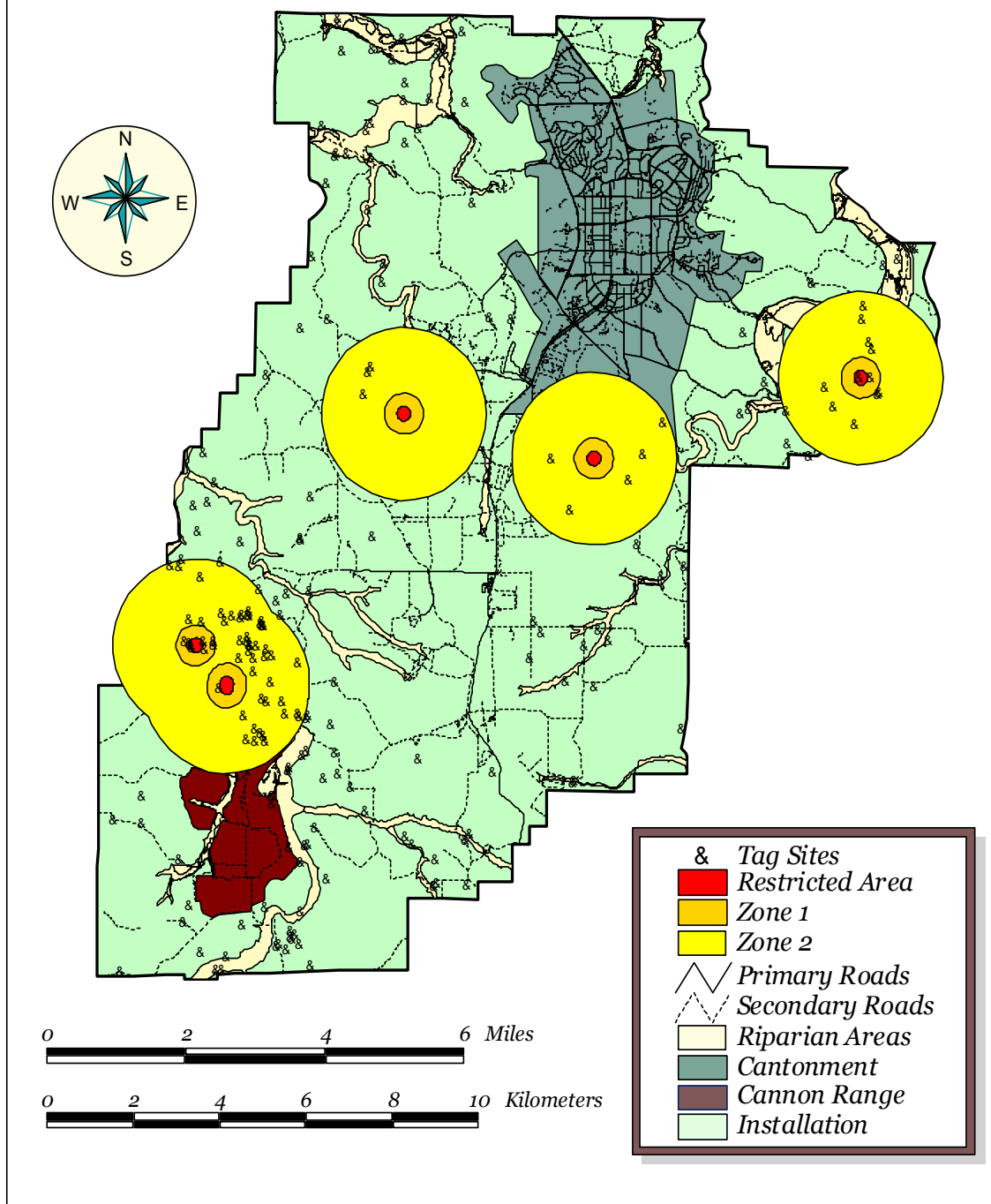
In April 1999, CERL contracted the Illinois State Museum Society (ISMS) to conduct combined archival, Geographic Information System (GIS), and archaeological/geomorphic investigations at FLW for the purpose of locating and evaluating stratified archaeological sites. Building upon the late Dr. Paul Albertson's work, the Stratified Sites Project (SSP) was designed to locate tracts within FLW that are likely to contain sites with deep, stratified cultural deposits with an occupational history that spans a significant portion of the Holocene epoch (Ahler et. al. 2000). Existing GIS data layers are being used to create associational locational models (a form of predictive modeling) that partition the installation into tracts with high probability for containing specific site types based on associated site and non-site (landscape) attributes. Once existing GIS data layers (soil-geomorphic alloformation, soil series, stream type, and archaeological site locations) were compiled, additional GIS data layers were also constructed. These include, but are not limited to, layers showing stream order, spring locations, stream depths, and montages of historical aerial photographs showing the extent of pre-fort agricultural and Army-related disturbance to the flood plain landscapes. These and possibly other GIS data layers were then used to construct a refined predictive model for the location of deeply stratified sites and the location of large Late Woodland-age village sites (Ahler et al. 2000).

### 3.1.8 Native American Consultation

In 1994-1995, the installation began compliance procedures with Section 6 by notifying the Osage, Sac/Fox, and Otoe-Missouria tribes of an inventory to be conducted by the U.S. Army St. Louis Corps of Engineers. Tribes were provided a collections summary. The EENRD also communicated by letter and phone with representatives from the Osage and Sac/Fox regarding our ongoing Phase II program. The NAGPRA inventory of all human remains and funerary objects was conducted in March 1996 by the St. Louis Corps Mandatory Center of Expertise for the Curation and Management of Archaeological Collections (MCX-CMAC) with a final report submitted for review in January 1997. All human remains and a majority of archaeological collections are now housed at the University of Missouri, Columbia facility described above. Revisions to the inventory report have been made which will be made available to the tribes listed above in compliance with Section 5. Repatriation, if it is needed in compliance with Section 7, will take place within the 2001-04 time frame. Cave sites along the Big Piney River and

# Fort Leonard Wood

## ❖ Environmental Overlay ❖



**Figure 3.5:** Environmental Overlay of Natural and Cultural Resource Sites.

Roubidoux Creek have been selected for potential reburial sites. One site, Sadies Cave, had a protective gate installed as part of the Miller Cave Complex Project (Matheson and Albertson 1995; Ahler et al. 1995) and 23PU744 (Lohraff Cave) was gated in the spring of 2000 as part of the Lohraff Cave Complex Project (Ahler et al. 1999; Edging and Ahler 2000 Kreisa and Adams 1999; Walaszek and Taylor 1999).

In FY2001, FLW continued working towards compliance with NAGPRA by establishing cultural affiliation and standard operating procedures for consultation with appropriate federally recognized Native American tribes. To date, a cultural affiliation overview has been completed and will be reprinted in the CERL technical series (Yelton 1998; Yelton and Edging 2000). This overview, along with the final inventory, will be submitted to federally recognized tribes that have the strongest association with FLW late prehistoric remains. At that time, SOPs that address inadvertent discoveries, and a Comprehensive Agreement that develops a long-term relationship with the appropriate Native American groups, will be drafted in FY2001-02 and are included in the SOPs below.

### 3.1.9 Historic Projects

Between 1987-1992 three major cantonment area surveys were completed that were instrumental in the evaluation of WWII era buildings and structures. The *Cantonment Historical Resources Survey* (Drummond and Zerega 1987) documented the kinds and locations of stonework across the installation and served as a guide in evaluating WWII era stonework and in the historic context for the Black Officers' Club report (Smith 1998). The Installation Building Survey (HBA 1992) served as the baseline study for significant World War II Buildings. In turn, these reports were crucial to the completion of the FLW Historic Preservation Plan (HPP) (HBA 1992). The HPP became the first major inventory and evaluation of cultural resources at FLW. Over the years many changes in the military mission and accomplishments in the CRM Program and needed updates has warranted a major revision of this document. Instead, the ICRMP document will replace the HPP and serve as the overarching CRM document for the future

Built in 1912, the Rolling Heath Schoolhouse is one of only two pre-military structures still standing on the installation (Edging 1996). In August 1993, Rolling Heath was determined to be eligible to the NRHP by the MSHPO. The rehabilitation of the building, funded by the Legacy Resource Management Program (LRMP), was completed in May 1995. Inside, display panels contain photographs and graphics describing the natural and cultural history of the Big Piney region. From this location, guided and self-guided tours are conducted to various natural and cultural sites along the River. Since 1995, several education, family, professional, agency, military, and conference groups have toured the Big Piney River from the school. The rehabilitation of the school has in turn led to the overall Big Piney River Interpretive Project that is designed to promote public education and involvement essential for preserving the installation's rich natural and cultural resources. Located in the center of the Big Piney River corridor, the school has been and essential part of a proposed archaeological and natural resource district.

Between FY1993-1995, the DoD LRMP funded the restoration of the stonework, mural, and historic context study of the Black Officers Club, Bldg. 2101 (Smith 1998). [https://128.174.5.51/denix/Public/ES-Programs/Conservation/Legacy/cultural\\_history.html](https://128.174.5.51/denix/Public/ES-Programs/Conservation/Legacy/cultural_history.html). The report summarizes U.S. Army policy and history of African American soldiers during World War II, the history of the Engineer Replacement Training Center (ERTC) and Building 2101, and the life of Samuel Countee, an aspiring Black artist. The report also provides an appendix on World War II era stonework. Built originally as a standard A-12 administration building in 1941, Bldg. 2101 was modified for use as the installation's Black Officers' Club in 1942. The mural is located above the fireplace at the gable end of the addition (**Figure 3.6**) Lending a sense of permanence surrounding the building is an extensive array of sidewalks, retaining walls, and chimney built by German POWs in 1945 (Smith 1998). During World War II, Building 2101 was a part of a neighborhood of barracks, mess halls, recreation centers, a chapel, and day rooms that served African American units of the ERTC. Based upon archival evidence, it is likely that the Building 2101 conversion was the result of General U.S. Grant III's desire to concentrate administrative facilities and be proactive in providing troops recreational clubs. In 1998, the MSHPO determined that Building



2101 is eligible for listing on the NRHP under Criterion A and C, social and military history and art (Smith 1998).



**Figure 3.6:** The Mural inside the WWII Black Officers' Club (courtesy Joe Proffitt, Natural Resources Branch, FLW).

The stonework that surrounds Building 2101 sets it apart from surrounding World II buildings however, what binds this building to the past as a Black Officers' Club is the mural or painting. The painting is four by 10.5 feet and is done in oils on three plywood strips. The painting depicts a black couple at a picnic, he playing a banjo and she lounging back on one arm, listening. Although the painting was restored in 1995, it was not until 1998 that

the identity of the artist was revealed. Samuel Countee, a professional artist who served with the 7th Training Group and 436<sup>th</sup> Engineer Company during World War II painted the mural in either 1943 or 1945. The landscape and figures may be autobiographical according to a close relative that visited the painting in 1998. The mural is historically significant as a creative art form alone, however; the identity of the artist has greatly enhanced the significance of the mural, the building, and its history.

In 1995, the NPS restored the stonework surrounding Building 2101 (See **Figure 2.12**). The goals of the project were to use the original mortar composition and preservation techniques for repairing stonework in the cantonment and to export this expertise to other installations. An inventory of extant stonework across the country however has shown that FLW is unique in the amount and quality of surviving stonework. Eleven locations across the cantonment are now considered as a historic group within a proposed historic district. German Prisoners of War, the majority of which were veterans of Rommel's Afrika Corps, constructed all of the World War II era stonework at FLW. In July 1998, the stonework associated with Building 2101, the Black Officers' Club and in ten locations within the cantonment, was determined to be eligible to the NRHP by the MSHPO (Burt et al. 1999).

In 1998, the Environmental Division, the Engineer Design Branch, DPW, and the Engineer Museum relocated a WWII chapel to the Engineer, Chemical Corps and Military Police Museum area. In FY2000 heat and electricity were installed. The 43<sup>rd</sup> AG Chapel, originally used by black servicemen in WWII, has been placed near the Chemical Corps and Military Police memorial groves and will be an active religious building within the extant WWII complex. This complex contains original WWII temporary buildings with interpretive displays of army life such as mess halls, barracks, and day offices. One of the buildings within the complex contains a display of General Leonard Wood, a leading military and political figure in American History from 1885-1927. Another barrack houses a display on German Prisoners of War interned at the fort from 1943-1946 (See Stonework above). Finally, during the baseline study for the Utility Privatization Project, one building, the Water Intake facility was determined to be eligible to the NRHP by the CRM and the MSHPO.

Buildings that comprise a list of potentially eligible properties on the installation include: the Museum Area consisting of ten *in situ* and two relocated WWII buildings; the Garlington House (Bldg 2051), a WWII residence surrounded by extensive stonework and currently used as a VIP residence; the Red Cross Building (Bldg. 430), now the Ike Skelton Building; the Post Headquarters Complex has been extensively remodeled and now serves as a VIP residence; and the WWII Post Headquarters (Bldgs. 400, 401, 402) is

Directorate of Logistics (DOL) office and is surrounded by extensive stonework, and the Range House, built in the 1920s, was a residence in the town of Bloodland. It is now used as a storage facility.

In FY1997-99 a project was initiated to revise a technical report: *Made it in the Timber: A History of the Fort Leonard Wood Region, 1800-1940* by Steven Smith. From this work, we developed a detailed research and management plan for the evaluation of historic sites. For the revision we stressed the new historical research within natural and cultural landscapes. We were also interested in how the northern Ozarks fits into the larger picture of American History. Oral histories, photographs, maps, and illustrations add flavor to descriptions and historical accounts. In total, it is a vastly different work that blends extensive historical documentation with oral history.

### **3.1.10 Districts**

Two archaeological districts, one located on the Big Piney containing prehistoric and historic sites, and one historic, containing WWII buildings and stonework, have been proposed to the MSHPO through presentations and technical reports. The districts were approved in concept but formal acceptance will await nominations that include multiple property listings within each district. This process will begin in FY2001-02. The following are brief summaries of the districts and how their implementation will further our long-term goals of preservation and interpretation.

**The Big Piney District**—The Big Piney River area from Stone Mill Spring in the north to Miller Cave in the south (11 km) contains numerous prehistoric and historic archaeological sites as well as recreational areas such as the post golf course, trout stream, river fishing, canoeing, hiking, and picnicking areas. One of the goals of the Big Piney River Interpretive Project (BPIP) is to nominate the area as an archaeological district. Many of the archaeological sites have been investigated and deemed eligible to the NRHP. These sites could be grouped together in a multiple property listing to organize the district. This process, and the ongoing interpretive corridor offer an excellent opportunity to preserve and protect cultural resources that can also educate and provide recreational resources to the FLW community. Signage, benches and hiking trails have been placed above Rolling Heath Schoolhouse, and interpretive displays for the Rolling Heath Schoolhouse have already been completed.

**World War II Historic District**—The FLW cantonment area contains buildings and stonework deemed eligible to the NRHP. Although many World War II buildings have been removed as part of the mandated teardown, several significant WWII buildings remain as well as surviving examples of WWII stonework. It is imperative that the remaining buildings and stonework be preserved. The preparation of a multiple property nomination as part of a historic district has been cited as the most effective approach for listing the buildings and stonework in the NRHP. As the stonework may be the best surviving example of POW stonework in the country it is essential that this process be successful. In an attempt to preserve extant stonework in the proposed Industrial/Technology Park, a Memorandum of Agreement (MOA) between the U.S. Army, FLW, the Kansas City Corps of Engineers, and the Missouri State Historic Preservation Office has recently been developed in draft form.

### **3.1.11 Historic Sites Evaluation**

Historic sites, namely the small towns, cemeteries, schools, and hundreds of farmsteads that predate the installation, constitute a large portion of the FLW archaeological record. Unfortunately, a consistent criterion of NRHP evaluation has not always been the standard in Missouri and at Fort Leonard Wood. Since 1992, the CRM has endeavored to reach a consensus on what constitutes an NRHP property given the hundreds of historic sites. The following criterion applies: Time frame of occupation, site integrity (intact foundations, outbuildings, soils), dateable artifacts, archival evidence from maps or aerial photography, and context. For example, antebellum period sites such as mills and a few homesteads are rare and should receive NRHP status; however any time period with intact foundations and archival support should receive consideration. Aerial photographs that date to prior to the establishment of the fort should be studied prior to any survey. Topographic maps that show site locations such as houses,



churches, cemeteries, and schools and land acquisition maps that chronicle the ownership of installation lands in 1940 are invaluable. County, family, and oral histories also comprise a vital database. In 1997-98, an oral history project was conducted with long-time residents of the FLW community. Historic context within a larger settlement system is also a major criterion for evaluation (See Historic Context Study Smith [2000] above). And thematic context, where the site can be placed within continuous and/or long-term occupations is significant for NRHP status. For FLW we developed a historic overview that charted the major chronological changes including: 1) initial settlement to Civil War; 2) Farming and Tie-Hacking 1870-1910; 3) The Landscape Exhausted 1910-1940 (Smith 1993, 2000). Although a historic context statement has been developed, no Phase II archaeological testing has been conducted on any historic era archaeological sites. Phase II projects directed at historic sites as well as a historic landscape project that precedes this effort, should receive a higher priority in FY2002-2006.

### 3.2 Annual Work Plan FY 2001

<b>Table 3.2: CULTURAL RESOURCE PROGRAM: ANNUAL WORK PLAN</b>					
<b>Mission:</b> Eliminate impacts to military mission.		Meet compliance requirements.		Identify, enhance & implement program efficiencies.	
<b>LONG RANGE GOAL</b>	<b>ANNUAL OBJECTIVE</b>	<b>PROJECT</b>	<b>MECHANISM</b>		<b>Actual Allocations</b>
<b>Reduce Conflict of Cultural Resources with Military Training</b>	Manage Historic Properties	Conduct Archaeological Survey (1600 acres)	Project Order CERL and Contract		<b>85k</b>
<b>Reduce Conflict of Cultural Resources with Military Training</b>	Manage Historic Properties	Conduct subsurface evaluation of 10 sites	Project Order CERL and Contract		<b>190k</b>
<b>Reduce Conflict of Cultural Resources with Military Training</b>	Manage Historic Properties	Evaluation of Historic Landscape Sites	Project Order CERL and Contract		<b>0k</b>
<b>Manage and Protect Cultural Resources</b>	Management and Protection	Historic Preservation Activities and Site Monitoring	Project Order CERL and Contract		<b>177k</b>
<b>Manage and Protect Cultural Resources</b>	Management and Protection	Prehistoric Context Statement	Project Order CERL and Contract		<b>35k</b>
<b>Manage and Protect Cultural Resources</b>	Compliance with 36 CFR 79	Curation	Project Order CERL and Contract		<b>25k</b>

<b>Improve Program Efficiency</b>	Compliance with NAGPRA and NEPA	Finalize and Implement ICRMP	Project Order CERL and Contract		<b>60k</b>
<b>Total Annual CR Program</b>					<b>572k</b>

### 3.3 Five Year Work Plan with Budget

Table 3.3: CULTURAL RESOURCE PROGRAM: FIVE YEAR WORK PLAN						
		FY 02	FY 03	FY 04	FY 05	FY 06
Compliance with and Site Monitoring according to NHPA and ARPA	180k/yr to 200k/yr					
Complete NRHP Evaluation of Archaeological Sites	200k/yr					
Complete NRHP Archaeological Survey	160k/yr					
Cultural/Biological Inventory of Cave Resources	100k/yr					
Compliance with NAGPRA	30k/yr					
Evaluate Potential Sacred Sites	50k/yr					
Compliance with 36 CFR 79	50k/yr					
Historic Building Survey	120k/yr					
Public Awareness and Education of Cultural Resources	75k/yr					
Comprehensive inventory of all of the monuments and memorials	0k/yr					
Document Inventory	30k/yr					
Evaluation of Historic Landscape Sites	70k first year 100k/yr					

### **3.4 Future Inventory/Management Requirements and Recommendations**

Although much has been accomplished in the past decade, cultural resource management projects have been proposed that will ensure the inventory and preservation of cultural resources. The following requirements and recommendations are contingent on adequate funding levels through FY2006:

- Complete the archaeological survey of the installation by the year 2005; this will require approximately 2-3000 acres per year;
- Ensure that significant archaeological sites and historic buildings are protected through NRHP testing and historic building documentation;
- Mitigate and stabilize sites and/or historic buildings/structures that are severely impacted by vandalism or adversely affected by construction;
- Systematically monitor archaeological sites across the installation in accordance with ARPA and NAGPRA;
- Conduct small survey, data recovery projects, and data requests as needed;
- Assess significance of all buildings reaching 50 years in the next decade;
- Coordinate with the MSHPO and the ACHP to obtain agreement on items covered in Section 106 review process of the NHPA.
- Continue to serve as liaison with state and federal agencies;
- Curate all artifacts under federal guidelines (36CFR79) and the Native American Graves Protection and Repatriation Act (NAGPRA) at the federal repository, University of Missouri, Columbia;
- Complete Section 5 Inventory Consultation and Procedures for Inadvertent Discovery of Human Remains and Funerary Objects;
- Evaluate Potential Sacred Sites with Affiliated Indian Tribes;
- Complete prehistoric and historic context statements on FLW cultural resources;
- Initiate and complete cultural resource responsibilities regarding documentation of NRHP significant monuments, memorials, and documents;
- Revise the ICRMP as needed;
- Enhance public awareness and involvement through educational talks, signage, brochure, and museum display;
- Complete a stonework inventory and standard operating procedure based on recommendations presented in Burt et al. (1998);
- Complete archaeological inventory of cave sites in compliance with ARPA/NAGPRA and the Cave Protection Act;
- Initiate National Register of Historic Places nominations for eligible sites within the Big Piney River Corridor and Installation Cantonment and;
- Initiate and complete a Historic landscape and Historic NRHP testing Project.

#### **3.4.1 Archaeological Sites**

To date, 544 archaeological sites have been recorded on FLW. Of these, 352 are prehistoric Native American sites ranging from Late Paleo or Dalton to Late Woodland (8000 B.C.- A.D. 1400) as described

above, the remaining 169 sites date to the early nineteenth century through 1940. Twenty-three sites contain both prehistoric and historic components. Of the total number of sites, 279 have been determined to be eligible or potentially eligible to the NRHP, which affords them protection under current preservation laws (see **Figure 2.16**). In order to comply with current federal preservation laws cited above, it is crucial that additional archaeological survey of FLW property continue through FY2005. It is also essential that a sample of sites found during archaeological survey be subject to NRHP testing to evaluate their long-term status.

### 3.4.2 Potential Sacred Sites

The installation contains at least three sacred Native American sites that form part of a ritual complex within formal site complexes on the Big Piney River and Roubidoux Creek that date to the late pre-Columbian era (Edging 2000; Edging and Ahler 2000; Ahler and Edging 2001; Edging and Ahler 2001). These sites are protected under NHPA, ARPA, and NAGPRA. Consultation with appropriate federally recognized Native American groups is ongoing to determine the significance of these sites beyond the normal NRHP criteria.

### 3.4.3 Historic Buildings and Structures

The list of NRHP eligible buildings and structures is up to date as of January 2001; these buildings are described above in the historic projects and districts sections. The evaluation of buildings or structures, which in previous evaluations have been determined ineligible for listing, **only** if the MSHPO, ACHP or an interested member of the general public specifically requests they be evaluated. Such evaluations shall be done during a regularly scheduled evaluation period.

Conduct out of cycle evaluations on an as-need basis for buildings and structures that become 50 years old between scheduled evaluations. Such evaluations shall be scheduled when:

- A significant undertaking is planned,
- Consultation with the MSHPO identifies buildings and structures that are eligible for the National Register within the area of potential effect,
- The undertaking will adversely affect the identified buildings and structures.

Evaluate buildings and structures at FLW that are less than 50 years old and are not scheduled for demolition **only** if the Army, the MSHPO, or an interested member of the general public provides information that substantially supports the conclusion that the property is of exceptional importance. The definition of "exceptional importance" shall be that used in the National Register Bulletin "[Guidelines for Evaluating and Nominating Properties that Have Achieved Significance Within the Last Fifty Years](#)". FLW will consult with the MSHPO prior to demolishing any structure that is between 45 and 50 years of age, provided it is not covered by a pre-existing agreement document.

## 3.5 Preservation Activities Recommendations

The ICRMP recommends a procedure, which addresses the issues, involved in the preservation and rehabilitation of the historic resources of FLW. The treatment standards are utilized by the Installation Historic Properties Manager (CRM) to ensure that maintenance efforts have a positive, not negative, affect on historic buildings and structures. Plans for the Museum area are available for guidance to preservation management. Treatment standards should also be used by the CRM in maintaining historic building resources. DPW should provide assistance in removing and storing materials for future restoration and maintenance use. Part of the DPW effort should include providing adequate warehouse space to store salvaged materials such as windows, doors, and other appurtenances.

### **3.5.1 Historic Landscapes**

Consult the [Guidelines for Documenting and Evaluating Historic Military Landscapes: An Integrated Landscape Approach](#) for the appropriate methodology to conduct a Historic Military Landscape study.

### **3.5.2 Monuments and Memorials**

A comprehensive inventory of all of the monuments and memorials should be prepared by fiscal year 2003.

### **3.5.3 Documents**

It is recommended that all drawings and plans dated prior to 1950 be removed from FLW and be catalogued, copied, and moved to an appropriate archival facility.

It is further recommended that the next evaluation should be undertaken in five years to document the drawings and plans of buildings that have turned 50 years old since 1950, with future evaluations every five years thereafter.

### **3.5.4 Installation Building Stock**

In the next decade, the FLW CRM program will begin the process of assessing the significance of buildings that will reach fifty years in age. These types of structures include several brick “rolling pin” office and barracks and various neighborhood of ranch style duplexes and two story quarters. The program will begin with a level I HABS-HAER building evaluation.

## **3.6 Fort Leonard Wood Cultural Resources Staff Responsibilities**

The U.S. Army Construction Engineer Research Laboratories (CERL), the U.S. Army Waterways Experiment Station (USAWES), the University of Illinois, Urbana-Champaign and University of Missouri, Columbia, Colorado State University, and the Illinois State Museum Society have been instrumental in the effective management of cultural resources at the installation since 1991. In the performance of numerous cultural resource activities, the agencies and institutions listed above have endeavored to work closely with Natural Resources personnel who specialize in archaeology, cultural resources management, wildlife biology, forestry, land management, and GIS modeling. An interdisciplinary approach that incorporates existing archaeological, geomorphic, biological, archival, and preservation goals is essential to the success of the cultural resource management program. In order to continue this program it is vital that cultural resource management activities continue through the next decade.

At FLW, key personnel include: the CRM, a Natural Resource Specialist, and other personnel within the Environmental Division, the Engineer, Chemical and Military Police Museums and the installation Historian who chairs the Historical Board. Members of the Historic Board that include: Command Group including the Chief of Staff, the Garrison Commander, the CRM, Museum Curators, JAG and DPTM. Cultural Resource project contracts (Statements of Work) will be prepared and managed by the CRM at FLW and archaeologists in the Land Management Division, CERL. The Command Group, Garrison Commander, and various heads at DPW and DPTM, as well as other activity offices are the intended users. It is important for these offices to understand the responsibilities of the cultural resource manager (CRM) so that integration can be more effective. This section lists several basic CRM responsibilities.

- Complete and implement the ICRMP;
- Complete prehistoric and historic context statements;

- Coordinate cultural resources management with other installation managers;
- Advise/educate other installation offices, enlisted personnel, tenants, contractors, and guests on cultural resource issues;
- Plan and implement all cultural resource and historic preservation activities including Phase I archaeological and installation building surveys, Phase II NRHP testing, Data Recovery and Site Stabilization, GIS and site locational data base development, curation, site file maintenance, archaeological/biological monitoring, ARPA and NAGPRA;
- Assume Section 106 responsibilities for small survey projects and decisions regarding cantonment resources;
- Develop public awareness through public lectures, brochure, and newspaper articles;
- Oversee possible rehabilitation of properties eligible for the NRHP to ensure that such work is in accordance with standards and guidelines as outlined in this report. Develop agreement documents and standard operating procedures for preserving archaeological sites and WWII era cultural resources;
- Coordinate all projects with natural resource personnel responsible for endangered species, wetlands, timber areas, and land use. The Cultural Resource Manager will serve as liaison in the design and completion of Eagle Scout Projects associated with the Big Piney River Interpretive Project.
- Foster partnerships with outside entities (Federal Agencies, Universities, MSHPO, Native American groups, etc.)
- Oversee the maintenance of properties recommended by this report to be preserved but not nominated to the NRHP.
- Coordinate with the MSHPO and the ACHP on work programmed for historic properties to obtain agreement on items covered in Section 106 Review process of the NHPA.
- Complete an annual progress report presented to TRADOC, CERL, and the MSHPO. This report should detail all post cultural resource activities carried out during the previous year and;
- Performs other duties as required.

### 3.7 Types of Undertakings and Effects of Vandalism

Undertakings, by definition, are “Any Federal, Federally assisted, or Federally licensed action, activity, or program, new or continuing, that may have an effect on National Register resources and thereby triggers procedural responsibilities under” the National Historic Preservation Act of 1966, 16 USC 470-470w.

This section provides explanations of the types of undertakings that can potentially impact cultural resources at FLW.<sup>1</sup>

- Vandalism at prehistoric archaeological sites. The looting of prehistoric archaeological sites is an ongoing threat to significant archaeological sites across the installation. Although prehistoric sites are systematically monitored, looting of sites does occur periodically. Army undertakings such as road improvements, training area expansion do occasionally impact prehistoric sites. Due to the low probability of sites within the Interior Uplands, where most of our destructive training occurs, this has happened infrequently.
- Vandalism and training area destruction at historic archaeological sites. The destruction of historic archaeological sites by looting and training does occur. The use of metal detectors is prohibited at FLW as defined in the HPP (1992) and in recent memorandum (1999) drafted by Natural Resource Branch personnel.

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<sup>1</sup> General descriptions of potential undertakings listed here are based on a list developed for the HARP Guidance Document of the Navy.



- Land Interchange between FLW and the U.S. Forest Service (Mark Twain National Forest). Eight parcels of land have been selected. NRHP eligible sites exist within areas that will be obtained by FLW and in areas that will become part of Forest Service Lands. Currently in draft form, a report documents the kinds of natural and cultural resources within each parcel (Parsons 2000).
- The Utilities Privatization Act (UPA) involves at least one property eligible for the NRHP. Therefore, in accordance with Section 106 compliance procedures, protective covenants and recordation should occur prior to the transfer of these utilities out of Federal ownership. A final report documenting four buildings and associated stonework structures potentially affected by the UPA was submitted to the Natural Resource Office and the MSHPO in March 2001.
- The proposed Industrial/Technology Park contains extant WWII era stonework remaining from the demolition of the WWII 1900 Area. A Memorandum of Agreement between the Army, FLW, Kansas City Corps of Engineers, and the MSHPO has been drafted and is designed to evaluate and protect the stonework.
- Maintenance and protection of WWII era stonework. Cantonment construction projects that include ditch rehabilitation, sewer and gas lines etc. must take into account existing WWII stonework in all proposed projects.
- Maintenance of buildings, structures and landscapes that might be historic;
- Changes in the use of older buildings, structures, and land areas, which might have historic or cultural values;
- Accessibility programs, which can impact historic buildings, structures, and landscapes;
- Hazardous materials removal, which can alter the character of historic buildings, structures and landscapes, or disrupt archaeological sites and other resources;
- Implementation of corrective measures to manage encroachment, which can affect historic and archaeological resources in areas where such measures (e.g., acquisition of land and relocation of residents) may take place.
- Environmental programs, which can result in land-use changes, and other changes that can affect historic and archaeological resources; and
- Master planning and other planning activities, which shape the development of installations.

### 3.7.1 Resource Assessment Priorities

The sections below describe various activities conducted at FLW that pose potential risks to cultural resources. However, in the past decade, given the fact that most ground-disturbing training has been conducted in the Interior Uplands, an area of low pre-Columbian site probability that has been extensively surveyed for cultural resources, few sites have been disturbed.

### 3.7.2 Risks to Cultural Resources

The following routine operational and maintenance activities occasionally pose a threat to the physical integrity of archaeological sites, historic properties and biological/environmental resources. As long as Division and training managers adhere to basic FLW regulations regarding notification of training and construction, then many projects and training can proceed without delay. However, there are occasional deviations from routine procedures during the course of operations. In an attempt to facilitate communication between managers, an environmental overlay produced by the GIS system ARCVIEW is updated periodically and supplied to DPTM for distribution to unit commanders, DPW, and pertinent training personnel. This overlay is designed to provide information about sensitive natural and cultural resources and is designed for trainers, planners, and land managers (**Figure 2.17**). The map overlay

contains areas considered to be off limits or somewhat restricted. The cultural resource component of this overlay is based on up-to-date NRHP eligible site however; archaeological sites shown on the map are given the term "tag site". It should also be noted that the highest frequency for NRHP eligible sites is also in the most sensitive and restricted environmental zones. The following are natural and cultural categories included on the environmental overlay:

- Wetlands located primarily in the stream zones although upland wetlands due to karst hydrology are present;
- Threatened and Endangered Species and Special Communities;
- Endangered Bat Areas and NRHP Eligible Cave Sites;
- Archaeological Areas or Sites and;
- Riparian Zones—Plant and Animal Communities and Water Quality.

### **3.7.2.1 Vandalism and Training Area Impacts**

The looting of prehistoric archaeological sites is an ongoing threat to significant archaeological sites across the installation. Although prehistoric sites are systematically monitored, looting of sites does occur periodically. Army undertakings such as road improvements, training area expansion do occasionally impact prehistoric sites. Due to the low probability of sites within the Interior Uplands where most of our destructive training occurs, this has happened infrequently.

The destruction of historic archaeological sites by looting and training does occur. The use of metal detectors is prohibited at FLW as defined in the HPP (1992) and in a recent memorandum (1999) drafted by Natural Resource Branch personnel.

### **3.7.2.2 Cantonment Construction**

Pipeline, drainage and sewer ditches as well as other ground-disturbing projects in the Cantonment require a review for cultural resources. The Cantonment Area is excluded from consideration for prehistoric cultural remains due to the low probability of its Interior Uplands location and due to the level of disturbances that occurred with the construction of the fort and continuous building that has taken place in the decades since the establishment of the fort. Historic and World War II cultural resources must be considered however before any construction project is to proceed, therefore close communication between Directorate of Public Works planners and managers and the CRM is essential.

### **3.7.2.3 Road Maintenance**

FLW roads, ditches, culverts subject to regular maintenance activities, including grading, re-gravelling, pothole repairs, and patching existing asphalt surfaces; however, it must be noted that the construction of roads, including turn-a-rounds, ditching and culvert placement, may have the potential to disturb or destroy archaeological deposits. While covering exposed surfaces with pavement or other materials may not disturb deep archaeological deposits, this practice may destroy intact cultural on a near the surface. Areas designated as field maneuver sites for tactical vehicles also require survey due to the potential for displacement of buried cultural materials during periods of low soil stability, such as spring thaw or after extended rainfall.

#### **3.7.2.4 Natural Resource Practices in Previously Cultivated and Forested Areas**

Many of the areas of FLW have been intensively cultivated since the late nineteenth century. Other areas are routinely plowed and reseeded as part of forest or wildlife management programs. Continued plowing or other cultivation practices in these areas that does not exceed those parameters of soil displacement previously achieved, does not normally contribute to, or significantly enhance adverse effects to buried archaeological sites. It should be noted, however, that some timber management practices may result in a variety of soil disturbances, ranging from surface modification due to the mechanical actions associated with modern harvesting methods, to deep erosion following clear cutting. Thus post-harvest surveys may be required to re-evaluate newly exposed subsurface soil horizons. Re-forestation practices may involve activities that could also seriously disturb archaeological resources, such as the removal of existing vegetation including trees, and deep plowing to prepare the bed for seedlings. It should also be noted that new firebreaks require archaeological survey prior to construction. Any new construction projects such as sedimentation or wildlife ponds require archaeological survey prior to construction.

#### **3.7.2.5 Training Trails and Bivouacs**

The rehabilitation of trails and bivouacs should not affect archaeological deposits or historic properties if projects are limited to existing trails and bivouacs. If grading, excavation, leveling of contours, construction of bridges, stairs, latrines, or other structures is planned, then a Phase I archaeological survey must be conducted prior to the initiation of any construction activities.

#### **3.7.2.6 Previously Excavated Areas**

The use of existing borrow pits, former ponds, or other areas that have been previously excavated or dredged require no archaeological survey so long as all activities remain within the previously disturbed area.

#### **3.7.2.7 Activities in Areas of Designated Low Archaeological Probability**

Earthmoving and construction in areas on FLW that have been identified as possessing low archaeological probability should not affect prehistoric archaeological resources. The 1996/2000 FLW archaeological/ geomorphological predictive model identified zones of refined archaeological sensitivity based on: the presence/absence of cultural material; the degree of previous disturbance; and the presence of favorable or unfavorable environmental/location attributes. Low probability areas that are severely disturbed or possess unfavorable environmental characteristics such as steep slope or distance to water possess few to none of the attributes conducive to prehistoric settlement. Activities in low probability areas may proceed after review by the FLW CRM. Due to the possible presence of historic sites even in areas of low prehistoric site probability, it is imperative that all projects be reviewed prior to construction. This includes recommended future year construction projects identified in the FLW Master Plan Assessment Report.

### **3.7.3 Routine Activities**

There are a variety of routine activities that occur on FLW throughout each year that may have adverse effects, either through cumulative or repetitive impacts or by virtue of their episodic manipulation of the landscape. Section 106 of the NHPA requires a site survey to determine if historic properties exist within the project APE and their evaluation with regards to the NRHP. The following synopsis discusses the different types of installation activities and their potential impact on cultural resources.

### **3.7.3.1 Tracked Vehicles**

As long as tracked vehicles can travel on existing roads and can train in areas that have been determined to have no NRHP eligible sites all training can proceed as planned. Prior to training military personnel should contact DPTM Range Control and DPW Natural Resources to check on areas of sensitivity.

### **3.7.3.2 Wheeled Vehicles**

According to the studies at Fort Hood, Texas, the effects of wheeled vehicles on or near surface, and surface sites with very thin soil coverings, seems to be relatively slight. The study also indicates that the impact of wheeled vehicles that travel across sites buried in deeper soils, during wet weather, is very nearly as damaging as that caused by heavier tracked vehicles. As with tracked vehicles, damage is most serious in the softer soils near stream crossing points.

At FLW, tracked and wheeled vehicles are required to cross streams at existing hardened (culvert) points, except in areas already designated for amphibious training. Pre-designated hardened stream crossings protect the stream from excessive siltation and guard against stream bank erosion. The use of these crossings also has the effect of limiting damage to archaeological sites that are frequently located along streams.

The use of wheeled and tracked military vehicles is a routine occurrence on the FLW landscape. The nature of modern warfare and the training mission of FLW demands that these vehicles be allowed unrestricted movement within designated training areas. The studies conducted at Fort Hood, Texas and experience in examining random parcels of training areas on FLW, indicates that actual damage to archaeological sites by military vehicles, both tracked and wheeled, during the course of routine training exercises is not significant, relative to disruption of soil stratigraphy or destruction of archaeological artifacts within the soil column.

### **3.7.3.3 Mobility Obstacle Training**

Mobility obstacle training involves the construction and excavation of various temporary barriers to block or channel vehicle traffic on open terrain. These barriers range in magnitude from tank ditches two meters wide and deep to small craters created by demolition charges. Mobility obstacle training is not a major part of the FLW military mission and is allowed only in Engineer Training Areas, areas already designated as too hazardous for archaeological investigation due to the potential for UXO.

### **3.7.3.4 Range Management**

The construction or modification of target emplacements, support buildings, parking areas, and contour leveling or other improvements may result in damage or destruction to existing archaeological deposits. Previous surveys of ranges may not have included new firing lanes or peripheral support areas. Therefore, each new modification should be reviewed for potential adverse effects on historic properties.

### **3.7.3.5 Indirect Fire**

A major portion of the installation mission involves the training of field artillery units, mortar, armor and anti-armor crews for U.S. Army Reserve and National Guard units. Helicopter gun ships and combat fixed-wing aircraft also discharge live ordnance on FLW impact areas and ranges. A wide variety of projectiles, ranging from 60-120 millimeters are fired, dropped, or otherwise detonated within these designated areas. At FLW, targets are carefully pre-positioned to avoid damage to known historical sites. To ensure safety, buffer areas surround impact zones or ranges with highly restricted access, thereby enhancing preservation of historic properties near the impact area.

### **3.7.3.6 Direct Fire**

Direct fire weapons (tanks, personnel carriers, helicopter gun ships, etc.), utilize the Multi-Purpose Training Range (MPTR) constructed in 1994. Other ranges also allow limited direct fire. Direct fire effects tend to be extremely localized, and therefore are not considered significant threats to cultural resources. Section 106 Phase I surveys of the MPTR and other ranges have been completed therefore training should proceed.

### **3.7.3.7 Temporary Field Excavations**

Units training on FLW routinely prepare individual defensive fighting positions (foxholes). These small excavations usually range in size from 1 meter wide to 2 meters long and are approximately .5 meters deep. All such emplacements are backfilled immediately after use and prior to unit departure. This type of training activity has occurred on FLW for over 60 years and, in some areas, is a ubiquitous feature of the landscape. Since most training of this nature has been carried out in the Interior Uplands, an area of low site probability, damage to significant archaeological sites has been minimum. Nevertheless, this kind of training can only proceed in areas that have been surveyed for cultural resources. While digging is a necessary part of military training and cannot be restricted, units who encounter buried archaeological deposits or human remains, or are considering training that involves digging, are instructed to report that information to the FLW Range Control Officer and DPW to ensure that the archaeological deposits are protected from damage. In case of the inadvertent discovery of human remains, the Range Control Officer is further directed to take immediate steps to protect the human burial in place, cease all activities in the immediate area, and to notify the CRM manager. Such actions are required in compliance with NAGPRA and all Range Control Officers should be briefed on their responsibilities.

### **3.7.4 Future Undertakings**

- Coordinate and complete cultural resource responsibilities regarding the Land Interchange between the U.S. Forest Service (Mark Twain National Forest) and FLW;
- Coordinate and complete cultural resource responsibilities regarding the Utility Privatization Act;
- Coordinate and complete cultural resource responsibilities regarding the proposed FLW Industrial Technology Park;
- Coordinate and complete cultural resource responsibilities regarding significance assessment of buildings reaching 50 years of age within the next decade and;
- Coordinate and complete cultural resource responsibilities regarding the proposed Highway Route 8 extension.

## **3.8 Economic Analysis**

As stated in the DoD Instruction 4715.3, D.3.e "an economic analysis shall be conducted on all NRHP eligible historic properties that are being considered for demolition and replacement (Section 2825 of 10 U.S.C., (reference (f)). The economic analysis should include an evaluation of life-cycle maintenance costs, utility costs, replacement costs, and other pertinent factors."

### **3.8.1 Layaway Economic Analysis Tool**

Due to the number of historic buildings that the military must manage, the Army has developed a software tool to provide historic building lifecycle cost estimates for three management alternatives:

renovation and reuse, layaway/mothball and demolition. The program is designed to estimate costs over a 20 year time period. The economic analyses included in the program are:

- the cost of each alternative over the life-cycle of the building,
- the possible alternatives and additional costs incurred, and
- the point at which one alternative becomes a more viable option than others

The Layaway Economic Analysis Tool, Version 2.04 developed by the U.S Army Construction Engineering Research Laboratories, is a Windows 95/98NT based software tool available to DoD-users in CD-ROM Format.<sup>2</sup>

### 3.8.2 ECONPACK

ECONPACK for Windows is a unique economic analysis computer package available to engineers, economists, master planners, accountants, and other personnel throughout the DoD and the Government. ECONPACK for Windows is a comprehensive program incorporating economic analysis calculations, documentation, and reporting capabilities. It is structured so it can be used by non-economists to prepare complete, properly documented economic analyses (EAs) in support of DoD funding requests.

The analytic capabilities of ECONPACK for Windows are generic, providing standardized economic analysis methodologies and calculations to evaluate a broad range of capital investment categories such as barracks, hospitals, family housing, information systems, utility plants, maintenance facilities, ranges, runways, commercially financed facilities, and equipment.

[DD1391/PAX Support](#)

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<sup>2</sup> Copies may be obtained by contacting the USAEC Technical Information Center ([USAECTIC@aec.apgea.army.mil](mailto:USAECTIC@aec.apgea.army.mil)). The software can be downloaded directly by DoD users and contractors via [DENIX](#) (*user ID and password required*).

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## **4.0 INTEGRATION**

### **4.1 Integrated Cultural Resources Management Plan Mission**

In order to effectively implement the ICRMP, cultural resources compliance activities must be fully integrated into FLW's mission activities. According to AR 200-4, the ICRMP is a component of the master plan. FLW's primary mission is training. To prevent any delays to training activities, natural and cultural resource managers must provide the trainers with information that shows suitable and sensitive sites for specified training activities. With regard to cultural resources, training activities pose the greatest threat to archaeological sites. Since the installation commander has an obligation to comply with cultural resource legislation, he or she must ensure that cultural resources are taken into account with respect to training activities. The ICRMP was developed to assist the installation commander with cultural resource compliance activities by incorporating cultural resource data into installation plans and by anticipating potential conflicts.

### **4.2 Internal Coordination and Consultation**

The following is the recommended standard for coordination and consultation:

- Prior to development of alternative and recommended sites, for any action that has not already been NEPA-assessed;
- For all draft and final NEPA compliance documents, including environmental impact statements (EISs), environmental assessments (EAs), or records of environmental consideration (RECs);
- Ground-disturbing activities of any type, other than military training in an area previously assessed for ground disturbance;
- Repair or modifications to buildings or other structures possibly eligible for designation under NHPA and;
- Upon discovery of human remains or archaeological/historic artifacts of any type in any location.

Installation activities that also potentially effect cultural resources include master planning, operations and maintenance and natural resource management. AR 200-4 requires that the ICRMP identify "interface requirements between the cultural resources management program and other program areas (including but not limited to natural resources management, ITAM, master planning, facilities and housing, and mission related training and testing activities). The DA Pam 200-4 states that: ICRMPs, as a component plan to the installation Master Plan and should be prepared in conjunction with:

- Master planning (installation development and land uses);
- Natural resources management (Integrated Natural Resources Management Plans);
- Training management (Integrated Training Area Management and range management programs);
- Real property planning, including facilities, housing, and;
- Installation operations and maintenance activities.

This section provides approaches for integrating cultural resources activities with all relevant offices. An installation's ICRMP can be fully integrated with the mission only if it is coordinated with other installation offices and plans that can impact cultural resources. The ICRMP includes information about how managers can address cultural resource issues, how information is shared, and what are the cultural resource management priorities as a result of mission activities.



### **4.3 Directorate of Public Works**

Most offices that require cultural resource integration fall under the Directorate of Public Works (DPW). The DPW is responsible for managing roads, buildings, landscape, environment (hazardous wastes, air/water quality), energy, and natural and cultural resources at FLW. DPW maintains and manages land to conserve biodiversity, and ensure that the installation complies with federal and state environmental laws and regulations.<sup>3</sup> DPW, acting through the Chief of the Environmental Division is responsible for implementing INRMPs and ICRMPs (See INRMP 2000:26). To this end, it is imperative that DPW personnel keep the Cultural Resource Manager aware of all projects that may impact cultural resources. Many of these concerns deal with historic buildings and stonework within the cantonment. It is also important that DPW personnel in the Environmental Division inform the CRM of any impacts to cultural resources that occur on the FLW reservation.

#### **4.3.1 Engineer Division**

##### **4.3.1.1 Planning Branch**

The Planning Branch is responsible for the planning and implementation of all construction work on FLW. This includes coordination with exterior organizations and compliance with all laws and regulations. Because of these responsibilities, the Planning Branch periodically reviews all construction projects with the CRM. At this time these projects are assessed for potential impacts to cultural resources.

##### **Real Property**

The Real Property office has two primary functions – real property accountability and real estate actions. Under real property accountability, this office maintains the accounts of assets, or real property, maintains the disposal files, and receives any new construction. Real property is defined as land, structures and monuments. Real estate actions include Records of Availability (ROA), Records of Excess (ROE), non-Army usage of the FLW facilities, and annexation and jurisdiction issues.

##### **Planning Branch and Real Property Responsibilities:**

- Planning Branch should continue to coordinate construction projects with the CRM;
- Maintaining the Real Property Record Book, which includes both old and new cards for existing buildings, and cards for buildings that have been demolished;
- Archive old cards and cards of demolished building;
- Maintaining DD Form 1354 – Transfer and Acceptance of Military Property. Records include forms back to the mid-1950s. Responsibilities include archiving these records and;
- Maintain general files on the real estate of FLW. These files include newspaper articles, information on monuments, some historic site plans and maps.

##### **Cultural Resources Manager Responsibilities:**

- Prepare sections on Cultural Resources in ROAs and ROEs and;
- Provide the real property office with current data regarding historic building and structure inventories.

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<sup>3</sup> This section is reproduced from the Army's Guidelines to Prepare Integrated Natural Resources Management Plans for Army Installations and Activities

## **Master Planning**

The installation master plan is an official statement of an installation's long-range plans. The master plan provides information on existing conditions, and requirements for individual facilities and activities at an installation. The master plan is integrally tied to the mission. Each military installation plays a particular role in the national defense mission. Real Property Master Planning links the Department of the Army missions to the installation's real property required to accomplish the mission. The two primary purposes of the master planning process are as follows:

- It provides a systematic approach to defining the missions and operations assigned to an installation in terms of the facilities and land area required;
- It provides a foundation for developing and implementing a strategy for utilizing, acquiring and managing those assets (USACE, 1997) and;
- The primary goal of the master plan is to plan facilities that support long-range goals of the Army and the missions and personnel assigned to an installation in an efficient, economical, and environmentally responsible manner. The installation master planner is responsible for complying with all environmental laws and regulations.

### **Master Planning Responsibilities:**

- Integrates cultural resources data, in the form of a GIS data layer, into the master plan;
- Consults with the cultural resource manager on master planning activities that involve potential adverse effect to cultural resources that are not addressed in a cultural resources management plan;
- Integrates cultural resources inventories and management into master plan. Provide master planning with GIS data in a compatible format including cultural resource activities projected over the next five years and;
- Considers the revitalization versus replacement costs of historic properties as stated in the DoD Instruction, 4715.3. See Section 2.7.

### **Cultural Resources Manager Responsibilities:**

- Provide the master planning office with current data regarding cultural resources inventories and assessments. This should be presented in a format that is compatible with the current master plan (ARCVIEW). The CRM shall ensure that the data is kept current as cultural resource research activities are accomplished;
- CRM will keep master planning office abreast of cultural resource activities when necessary. The master planning office will be informed of cultural resource projects, particularly if it has the potential to effect how the master plan operates. This could entail an annually revised GIS map of areas surveyed and eligible or potentially eligible site locations. This is essential for the reservation, but cantonment resources such as a map and listing of historic buildings and stonework should be made available and;
- It is standard operating procedure (See Below) that once an archaeological survey is completed it is added to the GIS maps that detail previous archaeological surveys. The master planning office is informed since the area may be suitable for certain training activities.

### **4.3.1.2 Engineer Design Branch**

The Engineer Design Branch is responsible for the planning and implementation of road construction and maintenance, landscaping, utilities, GIS development, training area development, housing maintenance, demolition, and the design of all construction projects. The Engineer Design Branch has been instrumental in the completion and enhancement of several cultural resource projects and it is imperative that the Engineer Design Branch and the Environmental Division (Natural Resources Branch) effectively

communicate. The rehabilitation of Rolling Heath School House, the rehabilitation of the stonework at the Black Officers' Club and Big Piney Culvert, the Chapel 3 relocation and the ongoing Big Piney River Project are projects that have been successfully planned and completed with collaboration between Engineer and the Natural Resource Branches.

#### **Engineer and Planning Branch Responsibilities:**

- These branches are directly responsible for construction and maintenance projects at FLW therefore it is essential they coordinate with the CRM when planning potentially ground-disturbing activities or potential impacts to buildings, stonework to address any specific cultural resource issues;
- Report all inadvertent discoveries of cultural sites immediately to the CRM and stop work in the area to protect the site until the CRM can respond;
- Require that all contractors report the inadvertent discovery of cultural sites immediately to the CRM, and take measures to protect the site until further instructions are issued from the CRM and;
- Update GIS files on training areas.

#### **Cultural Resources Manager Responsibilities:**

- Continue to supply the Engineer and Planning Branches, DPW with current GIS data showing eligible and potentially eligible cultural resource sites. These maps have been consolidated to reveal a composite of both natural and cultural sensitivity areas called the Environmental Overlay map. The archaeological data is updated each year and included in Excel and ArcView databases and;
- Before undertaking a cultural resource project at FLW, the CRM will determine if there are any sensitive cultural resource sites within the proposed construction area. If the cultural resource study area contains cultural resources, the CRM should consult with Engineer and Planning Branches to determine the most appropriate course of action to evaluate and, if needed to preserve the cultural resource.

### **4.3.2 Environmental Division**

The Environmental Division at FLW is responsible for environmental quality, energy use and conservation, and protecting the natural and cultural resources on the installation. To accomplish this, the Environmental Division is comprised of the Environment, Energy, and Natural Resources Branches. Each branch although separate, works together in promoting and protecting the installation's total environment. Each environmental document that relates to this protection invariably includes issues that are concerned with cultural resources.

#### **4.3.2.1 Environmental Branch**

The Environmental Branch is charged with compliance with Army, Federal, and State environmental regulations. The programs regulated are Safe Drinking Water, Clean Water, Solid Waste, Hazardous Waste, Clean Air, National Environmental Policy Act, and Installation Restoration. Mission and operations impacted are Water Treatment Plant, Waste Water Treatment Plant, boiler plants, paint booths, wood working, fuel handling, vehicle repair, Engineer, Chemical, and Military Police field training, recycling, solid waste, noise, and clean up at old disposal areas.

#### **4.3.2.2 Energy Branch**

The Energy Management Branch is sensitive to all aspects of the utility and energy systems on the installation. This includes primary responsibility over such critical items as implementing energy awareness and conservation programs; managing utility purchases and sales; seeking out funding and

coordinating energy projects; and, reporting utility costs and usage. These efforts require balancing mission support, readiness and quality of life issues while mandating utility management policy, ideas and theories.

#### **Environmental and Energy Branches Responsibilities:**

- Environmental and Energy Branch projects that involve ground-disturbing activities will be passed through the FLW CRM. Ground-disturbing projects in areas that have not been surveyed for cultural resources or areas that have been surveyed with known sites must have site-specific surveys and or testing prior to projects;
- Refer to current maps for the location of cultural sites when planning environmental and energy projects;
- Report all inadvertent discoveries of cultural sites immediately to the CRM and stop work in the area to protect the site until the CRM can respond to the report and;
- Require that all contractors report the inadvertent discovery of cultural sites immediately to the CRM, and take measures to protect the site until further instructions are issued from the CRM.

#### **Cultural Resources Manager Responsibilities:**

- Continue to supply the Environmental and Energy Branches, DPW with current GIS data showing eligible and potentially eligible cultural resources sites. These maps have been consolidated to reveal a composite of both natural and cultural sensitivity areas called the Environmental Overlay map. The archaeological data is updated each year and included in an Excel and ArcView databases and;
- Before undertaking a cultural resource project at FLW, the CRM will determine if there are any sensitive environmental sites within the proposed construction area. If the cultural resource study area contains cultural resources, the CRM should consult with the Environmental and Energy Branches to determine the most effective way of evaluating and protecting cultural resources.

### **4.3.2.3 Natural Resources Branch**

The Natural Resources Branch is responsible for research, documentation, assessment and protection of natural and cultural resources. In 1992, the Natural Resources Branch was formed within the larger Environmental Division. The branch includes wildlife management, forestry, cultural resource management, and land management including ITAM and LCTA. Ground disturbing natural resource projects such as wildlife ponds, firebreaks, timber sales, bivouacs, forest roads, and other construction projects must have archaeological surveys conducted prior to the project therefore; all natural resource projects are coordinated with the CRM as standard operating procedure. Conversely, all cultural resource projects must be coordinated with natural resource personnel since some archaeological investigations are conducted near areas with endangered species and wildlife habitats such as wetlands. The integration of natural and cultural resource management is facilitated by the location of the Cultural Resource Manager, archaeological site files, and GIS systems in the Natural Resource Branch Office.

#### **Integrated Natural Resources Management Plan:**

Housed in the Natural Resources Branch Office, Environmental Division, the Integrated Natural Resource Management Plan (INRMP 2000) is the FLW commander's plan for supporting the military mission while managing, protecting, and enhancing those resources for multiple use, sustainable yield, and biological integrity (INRMP 2000). INRMPs are written to reflect the scope of the Army's stewardship requirements to sustain native ecological resources on a landscape and watershed scale and to comply with current legal mandates. Since both natural and cultural resource concerns occasionally overlap, it is appropriate for all INRMPs to contain specific sections dedicated to cultural resource issues and procedures, especially those procedures and projects that may involve natural resource personnel. Examples include the monitoring of biological and archaeological sites, the use of GIS databases to

illustrate both biological and cultural sensitivity zones, and the archaeological survey of timber sales, wildlife ponds, firebreaks and other projects.

An INRMP is required by the Sikes Act (16U.S.C. 670a *et seq.*), DoD Directive 4715.3, and AR 200-3. The Secretary of Defense is required to carry out a program to provide for:

- Conservation and rehabilitation of natural resources on military lands,
- Sustainable multipurpose use of the resources, which include hunting, fishing, trapping, and non-consumptive uses and;
- Public access to military installations to facilitate the use of natural resources subject to safety requirements and military security.

The plan is prepared, implemented and monitored by natural resource management professionals. Like the ICRMP, it is used to assist planners and implementers of mission activities and is a component of the Installation Master Plan. It is reviewed annually and updated no less than every 5 years.<sup>4</sup>

### **Natural Resource Responsibilities:**

- Natural resource projects that involve ground-disturbing activities will be processed through the FLW CRM. Ground-disturbing natural resources projects in areas that have not been surveyed for cultural resources or areas that have been surveyed with known sites must have site-specific surveys and or testing prior to implementation. Old firebreaks and the rehabilitation of existing roads are an exception to this requirement;
- Ground disturbing natural resource projects such as wildlife ponds, new firebreaks, timber sales, bivouacs, forest roads, and other construction must have archaeological surveys conducted prior to the project therefore; all natural resource projects are coordinated with the CRM as standard operating procedure;
- Refer to current topographic and GIS maps for the location of cultural sites when planning natural resource activities;
- Coordinate with the CRM when planning potentially ground-disturbing activities to assess the need for surveys for cultural sites or to address any specific cultural issues;
- Report all inadvertent discoveries of cultural sites immediately to the CRM and stop work in the area to protect the site until the CRM can respond to the report;
- Require that all contractors report the inadvertent discovery of cultural sites immediately to the CRM, and take measures to protect the site until further instructions are issued from the CRM and;
- Update GIS files on forest resources, firebreaks, wildlife ponds and other projects.

### **Cultural Resources Manager Responsibilities:**

- Continue to supply the natural resource office with current GIS data showing eligible and potentially eligible cultural resource sites. These maps have been consolidated to reveal a composite of both natural and cultural sensitivity areas called the Environmental Overlay map (**Figure 2.17**). The archaeological data is updated each year and included in EXCEL and ARCVIEW databases;
- Before undertaking a cultural resource project at FLW, the CRM will determine if there are any sensitive natural resource sites within the area of study. In the past this has been either endangered species such as bats that inhabit caves that are also archaeological sites, and areas that are considered wetlands, that may also contain important geomorphologic information. Consultation with natural resource personnel should alleviate any potential problems;

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<sup>4</sup> This section is reproduced from the Army's Guidelines to Prepare Integrated Natural Resources Management Plans for Army Installations and Activities

- If the cultural resource study area contains sensitive natural resources, the CRM should consult with the natural resource office to determine the most appropriate operating procedure and;
- Provide ARPA instruction and general site location data to Game Wardens responsible for the protection of natural and cultural resources. Alert Game Wardens to ARPA violations and assist in ARPA investigations. Keep Game Wardens aware of ongoing Phase I survey and Phase II NRHP testing projects.

### **Integrated Training Area Management (ITAM) Program**

Effective and realistic training relies on the availability of sustainable training land on Army installations. The ITAM, a joint DPTM, Training Support Battalion, DPW (Natural Resources Program) establishes a systematic framework for decision making regarding the use of Army training lands at or controlled by Army installations. The ITAM program integrates elements of operational, environmental, master planning, and other programs to identify and assess land use alternatives. The ITAM Program is built around four components:

- Land Condition Trend Analysis (LCTA), a management procedure that provides for collecting, inventorying, monitoring, managing, and analyzing tabular and spatial data concerning land conditions on an installation. LCTA crews can report on impacts to archaeological sites;
- Training Requirements Integration (TRI), a decision support procedure that integrates training requirements with land management, training management, and natural and cultural resources management processes and data derived from LCTA and Army Conservation Program components;
- Land Rehabilitation and Maintenance (LRAM), a preventive and corrective land rehabilitation and maintenance procedure that reduces the long-term impacts of training and testing on an installation and;
- Environmental Awareness (EA), a means to develop and distribute educational materials to land users. Materials relate procedures for sound environmental stewardship of natural and cultural resources and reduce the potential for inflicting avoidable impacts (AR 350-4).

Future work activities and projects of the ITAM Program are identified and developed in the Annual ITAM Work plan. The installation work plan is developed in the early spring of each year to reflect ITAM program requirements in detail for the following three fiscal years and in summary format for the subsequent two fiscal years. The ITAM coordinator, in conjunction with the LCTA and LRAM coordinators and GIS specialists, identify projects required to support the installation long-range ITAM plan, by fiscal year. Project input is also obtained from the DPW environmental and natural/cultural resources staffs and the installation Range Officer. The work plan reflects all ITAM activities for the installation.<sup>5</sup> Ongoing projects conducted at FLW through the Environmental Division ITAM coordinator include:

- Soil/Water Conservation & Integrated Training Area Management (ITAM) Program

The soil & water conservation program and ITAM program accomplishments have been combined due to the similarity in the goals of the program. The ITAM program is focused mainly on restoration of specific training areas due to training activities where the soil/water conservation programs emphasize all aspects of installation restoration;

- Dust Control

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<sup>5</sup> This information is taken from the *Department of the Army Integrated Training Area Management "How-To" Manual (DRAFT)* dated February 1999.

Maintenance measures on convoy routes and training areas required 82,000 gallons of Ligninsulfonate. Total convoy routes covered where 40 miles of aggregate roads and Training Areas 244, 224 & 236;

- Low Water Crossings

One major low water crossing was completed on Mushpaddle Hollow (Cannon Range) as part of the road network for the new smoke range Training Area 403;

- Soil & Vegetation Monitoring

Quarterly samples of soil and vegetation and resulting data from the new smoke training sites are collected, analyzed and compiled in reports for the Missouri Department Natural Resources. These activities are part of the on-going air permit program;

- Research & Testing

FLW leads the way in DOD for use of shredded rubber tires as a training medium. Since 1997 the Environmental and Range Divisions have applied over 150 tons of the tire medium on Physical Training (PT) sheds, hand-to-combat training pits and physical endurance (PE) courses. Currently 85% of the Installations training sites that had sawdust as the medium now use shredded rubber tires. Since the first use of the shredded rubber tire medium, FLW has experienced a dramatic drop in lost-time accidents on sites with the tire medium, no dust problems and reduced maintenance of containment barriers and training sites. The Natural Resource Conservation Service and the U.S. Army Environmental Center continued to use FLW as a trial site for wear tolerance testing of vegetation on military training lands;

- Geographical Information System (GIS)

This component of the ITAM program compiled all training areas and roads on the installation into GIS maps as well as an update on reorganization in the recent range and training area changes. The GIS component has created and or updated over 30 layers of natural resource and training land data. A satellite GIS program and station has been established at the Range Division to ensure military trainers with access and updated real time information on training lands on the installation;

- Pest Management (IPM);

The installations Pest Management Plan (draft) has been complete and is at TRADOC for final approval and;

- Habitat Enhancement

In conjunction with the Range Division the Environmental Division is currently developing the East Range Complex Landscape Fire Management Area Project. This Habitat Management Unit (HMU) will encompass 4,500 acres which will have a 7.6 mile long 40 foot wide improved firebreak with either a grass strip or road (paved or gravel), enclosing the area. This firebreak will make the HMU plan simple to administer and enhance the military mission by having a “let burn” (no fire suppression inside the designated fire breaks), enclosure on 22 Firing Ranges. The goals of the prescribed fire program and the creation of the HMU’s are to develop a pro-active military training regime that allows for consistent weapons training by preventing range shut downs due to fire suppression and allowing greater flexibility during times of extreme fire danger. It also satisfies natural resource objectives by providing for large-scale landscape habitat management activities for the area. This type of management is especially important to

augment the installation's remnant ecosystems (post oak flats and post oak savannas), which provide habitat for both endangered and endemic Ozark species.

#### **ITAM Coordinator's Responsibility:**

- Integrates cultural resources data, in the form of a GIS data layer, into the Annual ITAM Work plan;
- Consults with the Cultural Resources Manager on all ITAM work activities and projects that involve potential adverse effects to cultural resources and;
- Integrates cultural resources inventories and management into the Annual ITAM Work plan. Provide ITAM staff with GIS data in a compatible format including cultural resource sites.

#### **Cultural Resources Manager Responsibilities:**

- Provide the ITAM Program coordinator with current data regarding cultural resources inventories, assessments, and management plans. This should be presented in a format that is compatible with the current GIS data layers of the ITAM program (ArcView). The Cultural Resource Manager shall ensure that the data is kept current as cultural resource projects are completed and;
- The cultural resource manager will keep the EENRD ITAM manager abreast of yearly cultural resource activities in the form of an annual summary on file at the EENRD office. The ITAM manager will also be informed of all changes to the GIS database. The ITAM manager will be informed of cultural resource accomplishments (inventories, PAs) particularly if it has the potential to effect how the execution of ITAM work activities and projects

#### **NEPA Management Program**

The NEPA Management Program is responsible for ensuring that FLW complies with the requirements of NEPA. NEPA requires that federal agencies give appropriate consideration to the environmental effects of proposed actions in their planning process, and to prepare detailed statements for public review of major federal actions significantly affecting the quality of the human environment. AR 200-2, Environmental Effects of Army Actions, outlines the procedural requirements for completion of NEPA documentation. Army regulations require proponents of Army actions to complete appropriate documentation prior to taking proposed actions.

The NEPA evaluation process evaluates proposed actions on FLW and determines which level of environmental documentation is required for the action. These include:

**Categorical Exclusion (CX):** These are actions that are categorically excluded from further NEPA review as identified in AR 200-2. They do not individually or cumulatively have a significant effect on the human environment.

**Record of Environmental Compliance (REC):** A REC is a record that briefly describes the proposed action and its anticipated time frame, identifies the proponent, and explains why further documentation is not required.

**Environmental Assessment (EA):** An EA is a detailed statement outlining the anticipated effects of the proposed action. An EA is prepared prior to a proposed action and is subject to propose review and comment. An EA results in a finding of no significant impact (FNSI) or a notice of intent to prepare an EIS.

**Environmental Impact Statement (EIS):** an EIS is a detailed public statement documenting the environmental consequences of actions that may cause significant environmental impacts. The EIS process can be costly, complicated and time consuming.

The NEPA Program at FLW is responsible for preparing the Environmental Baseline Survey (EBS) for all Real Property transactions. This includes Real Property permits for off-post training. The purpose of the EBS is to determine the environmental conditions and identify the contamination liabilities of all



properties being considered for acquisition, out-grants, and disposals. A NEPA Project Manager and a contract employee staff the NEPA program.<sup>6</sup>

### **NEPA Program Responsibilities:**

The NEPA Project Manager, located in the Environmental Division, is responsible for considering all of the environmental regulations and determining which actions would drive an EA or an EIS. The NEPA Project Manager determines if the action may impact cultural resources and informs the CRM.

### **Cultural Resources Manager Responsibilities:**

- Review the actions as recommended by the NEPA Project Manager and determine what level of NEPA documentation needs to be done for cultural resources;
- Prepare, consult, and review cultural resource sections of the EA and EIS and;
- Grounds Maintenance and Pest Control.

Grounds maintenance is coordinated with wildlife and natural areas in the cantonment area. A cantonment resources survey and installation building survey conducted in the 1980s (1987, 1992) documented the array of WWII era stonework. From this inventory, several stonework locations have been protected and maintained as part of a working standard operating procedure. All grounds maintenance activities conducted at FLW have generally taken into account these resources. The CRM has had general success in protecting and rehabilitating stonework through coordination with the Engineer Design Branch, DPW. Future projects include signage and landscaping within Veterans Park and other stonework locations.

Pest Management on FLW is the responsibility of the Land Agronomist at Environmental Division (See INRMP 2000:100-101 for description).

### **Maps/Database**

As stated in Section 2.2, the Environmental Division has employed the ARCVIEW GIS system to create a cultural resource database for use in the ongoing cultural resource management program. The database is accessible to Natural Resource and appropriate DPW personnel. The inventory of all archaeological sites is updated annually in an EXCEL spreadsheet and as several GIS map layers. All archaeological sites by location and type (e.g., cave, cairn or rock art) and variables such as cultural affiliation, site size, and NRHP status are included in this database. Natural resource map layers such as topographic lines, streams, geology, soils, slope, timber sales, firebreaks, endangered species, wildlife plots, roads, elevation, training areas, and disturbed soils are compatible layers. From this database, the Environmental Division has constructed a working inventory of eligible and potentially eligible sites. This in turn has been used to create an environmental overlay for use by land managers and military planners. This database was also used to construct and refine a geoarchaeological probability model designed to locate alluvial sites across the FLW landscape.

## **4.4 Directorate of Plans, Training, and Mobilization**

The Directorate of Plans, Training, and Mobilization (DPTM) is the link between natural/cultural resources and soldiers training in the field. Coordinating training and CRM surveys and GIS Environmental Overlays, Environmental Guidelines to training brigades, tenet units and incoming U.S. Army Reserve and National Guard. DPTM operates and maintains the FLW range areas, associated with training responsibilities and field training sites related to scheduling training areas.

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<sup>6</sup> This section is reproduced from the Army's [Guidelines to Prepare Integrated Natural Resources Management Plans for Army Installations and Activities](#)

#### **4.4.1 Training Support Battalion (Range Division)**

Training Support Battalion (TSB) is responsible for setting the condition of the land that entails routine maintenance on range and training area facilities, roads, and vegetative conditions related to training.

##### **4.4.1.1 Range Control Office**

The Range Control Office is now under the auspices of the 3<sup>rd</sup> Brigade, TSB and therefore reports directly to the Brigade. Range Control is responsible for managing training lands, coordinating military training and releasing training areas for forestry, land restoration, and recreational use.

Adopting a conservation ethic into military training operations is critical to managing natural and cultural resources. TSB can place limits on military activities as needed to conserve natural resources and protect sensitive cultural resources. TSB provides access to training areas to accomplish natural and cultural resource management actions and implement the INRMP and ICRMP. TSB also provides opportunities for wildlife-related recreation and facilitates environmental guidelines involving range use.

##### **Range Control Officer's Responsibilities:**

- Inform the CRM if any training or other land use activities on the installation's rangelands involve ground-disturbing actions or have potential impacts on cultural resources;
- Enforce guidelines specified in the FLW regulation 210-14 that prohibits any unauthorized digging on FLW;
- Periodically review the environmental overlay that shows sensitive natural and cultural areas on FLW and;
- Hold periodic demolition awareness training;
- 

##### **Cultural Resource Manager Responsibilities:**

- Review proposed actions on training lands that pose potential threats to cultural resources;
- Consult with the Range Control Officer to arrive at satisfactory solutions to mitigate proposed activities that may impact cultural resources;
- Insure that all investigators have permission letters for entry into study areas;
- Insure that all investigators contact Range Control prior to entry into study area as specified in the Statement of Work for all Phase I and Phase II archaeological projects (See Appendix 1-2) and;
- Make demolition training available to interested contractors.

#### **4.5 Staff Judge Advocate**

The Staff Judge Advocate (SJA) provides legal advice and counsel to Command, Staff, and subordinate elements of MANSCEN. SJA responsibilities with regard to cultural resource management include:

##### **Staff Judge Advocate Responsibilities:**

- Conduct legal research and prepares legal opinions pertaining to laws, regulations etc. related to the NHPA, ARPA, and NAPRA;
- Reviews major compliance documents such as the Historic Preservation Plan and ICRMP and;
- Provides legal advice on relevance of cultural resource management projects to Historic Preservation laws.

- Cultural Resource Manager Responsibilities:
- Provides SJA with draft ICRMP and Historic Preservation Plans as part of the review process and;
- Consults with SJA issues related to ARPA, NAGPRA, and the NHPA.

#### **4.6 Funding Mechanisms for Construction Projects**

- 1) Major Construction Army (MCA): A five-year plan funded under congressional authority. It includes the major construction projects, whose "L-Work" (new work) exceeds \$500,000. The list of projects is reviewed and prioritized by the Installation Planning Board annually, in late October/November. A second meeting is held in the spring to review the previous year's submittal and plan for the next submittal.
- 2) Operations and Maintenance: O & M dollars are used to fund minor construction projects which includes L-work less than \$500,000, and all K-work or repairs. Funds are received by DPW annually and must be spent in the fiscal year in which they were received. Projects that are completed using these funds include:
  - Materials for Troop Construction Projects – these projects are executed by troops stationed at FLW, and include range road resurfacing, culvert repair/replacement, and general infrastructure repairs. No troop construction projects are allowed within the historic district;
  - Preventive Maintenance (PM) projects – these projects include the maintenance of the boilers and other (mechanical) systems-related elements;
  - Repair and Maintenance projects – these projects include all repairs and maintenance activities made to existing buildings and structures and;
  - Minor Construction – these projects include major rehabilitation projects than combine old work (K-work) with new work (L-work), and whose L-work is less then \$500,000. Job Order Contracts (JOC) fall under this program.

#### **Cultural Resource Manager Responsibilities:**

- Review work requests that will affect cultural resources;
- Work with project proponent to minimize effects;
- For projects that will not adversely affect cultural resources, prepare the necessary documents required by Section 106 of the NHPA for review and coordination with the MSHPO and;
- For projects that will adversely affect cultural resources, consult with the MSHPO under Section 106 of the NHPA on ways to mitigate the adverse effects.

#### **4.7 External Coordination and Consultation**

FLW must also respond to issues and concerns of outside entities. These include Native American Indian Tribes, historic preservation organizations, the general public, as well as Federal, State and local agencies. The ICRMP provides guidance for effectively integrating cultural resource management activities with these interested groups. FLW, due to its history and location, falls under the domain and auspices of several non-military agencies. Most of these agencies are strictly in an advisory role for FLW with no legal authority. Since 1992, the Environmental Division as liaison to local, state, and federal agencies, and universities, has fostered interagency cooperation and partnerships through projects, information sharing, assistance on ARPA, and coordination of Historic Preservation projects. The following is a list of groups the Environmental Division has worked with closely on a number of Historic Preservation projects and issues:

- Missouri Department of Natural Resources (MSHPO)
- Missouri Department of Transportation
- Missouri Department of Conservation
- Missouri Archaeological Society
- The Advisory Council for Historic Preservation
- U.S. Army Construction Engineering Research Laboratories
- U.S. Army Waterways Experiment Station
- U.S. Forest Service (Mark Twain National Forest)
- University of Missouri, Columbia (Anthropology, Soil Science, and Natural Resources)
- Illinois State Museum Society (Anthropology)
- University of Illinois, Urbana-Champaign (Anthropology)
- University of South Carolina Institute for Anthropology and Archaeology
- Colorado State University
- Native American Groups
- Other Interested Parties

#### **4.7.1 Public Involvement Plan (Based on the HPP (1992:94))**

An important part of Cultural Resource Management is the provision that the public be involved in some aspects of the program including the ICRMP. NHPA requires that particular interested parties like tribes be involved in the 106 process. Interested parties include local governments, Native American tribes, and the general public. The regulations require that the public be informed about the consultation process and that their views be elicited. The CRM and the installation should use existing public involvement procedures to provide this opportunity. The installation Public Affairs Office (PAO) should be contacted about Cultural Resource projects annually and the SJA should review all plans, MOAs and projects when needed.

Advertising in the local newspaper provides notification to the public as part of the review process. Additional activities such as talks, lectures, and tours for local school, historical societies, civic organizations, and business groups will increase the awareness and educational interests of the FLW and surrounding communities. Since 1992, several talks, tours and workshops have been conducted by the CRM at archaeological and historic sites across the installation. A guided tour and talk emanating from the Rolling Heath School House to other parts of the Big Piney River has been a mainstay of the Cultural Resources Management Program.

#### **4.7.2 Missouri State Historic Preservation Office**

The Missouri State Historic Preservation Office (MSHPO), according to the National Historic Preservation Act of 1966 as amended (NHPA), must review and/or advise on undertakings and actions that affect cultural resources at FLW.

Interaction and review actions between FLW and the MSHPO have been mutually beneficial. Since 1992 the MSHPO has reviewed all survey, testing, and data recovery projects as well as the FLW geomorphology and predictive modeling projects. The MSHPO has also been extremely helpful in the evaluation of WWII cultural resources including buildings and stonework including the development of

an MOA designed to protect WWII stonework in the 1900 Area. In turn, FLW has hosted several tours, a workshop, and a Missouri Advisory Council on Historic Preservation meeting.

#### **Cultural Resources Manager Responsibilities:**

- Review work requests that will affect cultural resources;
- Consult with the state on all archaeological survey and testing projects. Incorporate their comments into report drafts sent to investigators;
- For projects that will not adversely affect cultural resources, prepare the necessary documents required by Section 106 of the NHPA for review and coordination with MSHPO;
- For projects that will adversely affect cultural resources contact the MSHPO under Section 106 of the NHPA on ways to mitigate the adverse effects;
- Provide the master planning staff with current data regarding cultural resources inventories, assessments and management plans. This should be presented in a format that is compatible with the current master plan. The CRM shall ensure that the data is kept current as cultural resource research activities are accomplished;
- Continue to foster partnerships with the MSHPO;
- Negotiate Memorandum of Agreements (MOAs) and Programmatic Agreements (PAs) with MSHPO to protect, preserve, and manage cultural resources and;
- Integrate cultural resources inventories and management into master plan. Provide master planning with GIS data in a compatible format including cultural resource activities projected over the next five years.

#### **4.7.3 Advisory Council on Historic Preservation**

The Advisory Council on Historic Preservation (ACHP) is an independent Federal agency created by the NHPA, and is the major policy advisor to the Government in the field of historic preservation. The ACHP is composed of 20 members who are private citizens and experts in the field appointed by the President, along with Federal agency heads and representatives of State, local, and tribal governments.

The ACHP provides a forum for influencing Federal policy, programs, and decisions as they affect historic resources in communities and on public lands nationwide, and administers Section 106 of NHPA. A small professional staff is located in Washington, DC, and Denver, Colorado.

Working with Section 106, Federal agency officials must consider the impact of their programs and projects on places of historic value. They incorporate ways to protect and enhance historic resources through their land-use planning, funding, and licensing actions. Federal agencies also consult with project proponents, members of the general public, state and local officials, and the ACHP to address adverse impacts on historic properties.

The Section 106 review process guarantees that state and local governments, Indian tribes, private citizens, and organizations will have meaningful involvement in Federal project planning when proposed actions affect historic resources they care about.

Primary ACHP functions as directed by NHPA, the ACHP:

- Advocates full consideration of historic values in Federal decision making;
- Oversees the Section 106 review process, and mediates in controversial cases;
- Reviews Federal programs and policies to further preservation;

- Provides essential training, guidance, and public information to make the Section 106 review process operate efficiently and with full opportunity for citizen involvement and;
- Recommends administrative and legislative improvements for protecting the Nation's heritage with due recognition of other national needs and priorities.

#### **Cultural Resources Staff Responsibilities:**

- Follow section 106 responsibilities and;
- Continue to foster partnerships with the SHPO and ACHP.

#### **4.7.4 Other Interested Parties**

University research, public involvement, public questions about cultural resource management issues, etc can all be considered other interested parties. Relationship to and response to will be handled by the Cultural Resources Staff.

#### **Cultural Resources Staff Responsibilities:**

- Carry out public involvement and interpretation

### **4.8 Public Access to Cultural Resources**

Archaeological sites or historic buildings at FLW have the potential for positive publicity for FLW; however, the most long-lasting approach has been to publicize the Big Piney River as the Big Piney River Interpretive Project (BPIP). The BPIP offers the public a chance to visit archaeological, historic, and nature sites within an 11-km riverine corridor. These sites are near or within established recreational areas such as the post golf course, trout stream, canoe access, and hiking trails. Providing public access to archaeological sites is only considered after adequate NRHP testing of sensitive sites has been completed. This includes archaeological investigation and analyses. After investigation, these sites can then be considered as interpretative sites, which in turn meet the Army's criteria for sites that can formally be nominated to the NRHP. To date, the Miller and Ramsey Complex of sites along the Big Piney River have been intensively investigated by projects initiated through the Cultural Resource Management Program and all of the sites have been determined NRHP eligible by the CRM and the MSHPO. These projects, along with the rehabilitation of Rolling Heath School as a nature/cultural center, form parts of a proposed district that meshes with the BRIP. Recently, the Natural Resource and Engineer Design Branches, DPW, the FLW Museum, the Garrison Command, the Command Group and other directorates have collaborated on a historic driving-tour brochure that unites historic buildings and sites in the cantonment with sites along the Big Piney River. These include the Black Officers' Club, the Museum Complex, the Garlington House, the Old Post Headquarters, the Red Cross Building, Rolling Heath School House, and Miller Cave. In addition the construction of a museum display that chronicles the pre-Columbian era and historic settlement along the Big Piney River and FLW Region has been proposed. This display will direct visitors to the Big Piney River. The museum display will be housed in a building within the extant WWII complex. The main museum contains the Engineer, Chemical, and Military Police school displays.

#### **Museum Responsibilities:**

- As the FLW primary outreach activity for public involvement, the museum should coordinate outreach programs with the CRM;
- Cooperation, consultation and construction of an interpretive pre-Columbian and historic era settlement display housed at the MASCEN Museum and;
- Promote non-museum resources within the BPIP.

**Cultural Resources Manager Responsibilities:**

- When the CRM perceives that public access to a particular cultural resource is necessary it is beneficial to contact the museum for coordination;
- Cooperation and consultation in the construction of an interpretive pre-Columbian and historic era settlement display housed at the MANSCEN Museum;
- Research and consultation on signage at interpretive sites located within the Big Piney River Interpretive Project (BPIP);
- Research and consultation on a cultural resource brochure on the cultural resources at FLW highlighting a driving/hiking tour of cultural sites along the Big Piney River and;
- Conduct tours to sites within the BPIP. To date over thirty tours have been conducted to sites along the Big Piney for local, state, and national groups.

## 5.0 STANDARD OPERATING PROCEDURES

The following Standard Operating Procedures (SOPs) provide guidance on the annual cultural resource activities conducted at FLW, Missouri. Cultural Resource Management personnel and projects are administered through an agreement with the Environmental Division, the U.S. Army Construction Engineering Research Laboratory (CERL), and the Department of Anthropology American Archaeology Division, University of Missouri, Columbia. Although these efforts will be described from a cultural resource management perspective, they embrace an inter-disciplinary approach that incorporated archaeological, biological, geological and data base development in their framework.

The following SOPs indicate under what conditions the SOPs are used and who initiates them.

### 5.1.1 SOP # 1: Section 106 Compliance

**Overview:** Section 106 (36 C.F.R. Part 800) of the National Historic Preservation Act (16 U.S.C. Section 470 et seq.) requires Federal agencies to take into account the effects of their undertakings on historic properties that are eligible for listing in the National Register of Historic Places. The Army will design all ground disturbing, construction, or maintenance projects to avoid damage to historic properties that are eligible for listing in the National Register of Historic Places (NRHP). Historic properties may include archaeological sites, buildings, landscapes, structures, and potential sacred sites. Until NRHP eligibility is formally determined, the Army will treat each historic property as potentially eligible and avoid and/or protect it from damage. Unless exempted below, the Army will seek comment from the Missouri State Historic Preservation Officer (MSHPO), affected Indian Tribes, and interested parties, and will take that comment into account in its decision-making process.

**Policy:** Each time the Army proposes to engage in an undertaking that has the potential to affect prehistoric archaeological sites; historic buildings, structures, and landscapes; or potential sacred sites, it will consider whether that undertaking is *exempt* from coordination and either record that the undertaking is *exempt*, or engage in *consultation* for Section 106 compliance. It will complete the Section 106 compliance process before it irrevocably commits to the undertaking.

For the purposes of this ICRMP, any project or other activity on FLW qualifies as an undertaking if the project or activity alters or changes the characteristics of a property that is included in or eligible for inclusion in the NRHP. A Phase I archaeological inventory survey must be accomplished on all areas that have not been previously surveyed. The exception to this is Cannon Range, an area in the SW portion of the base that has received extensive destruction (**Figure 2.3**) and all existing Ranges. These ranges have been extensively disturbed during their construction in previous decades. Prior to the initiation of any activity on the project site, the CRM will determine whether or not prehistoric or historic properties are present in the project Area of Potential Effects (APE), and evaluate any discovered archaeological sites or other properties. If prehistoric or historic properties are found on the project site or within the project APE, and the effect of the project on the historic properties is determined to be adverse, the CRM must be granted the requisite time declared by law (36 CFR § 800.1(c)), to comment on this determination, prior to the resumption of project activities. Project APEs include the actual project site as well as adjacent or noncontiguous areas where project activities may affect the character of a historic property.

**Procedures:** The FLW NEPA coordinator (Coordinator) reviews, for environmental and cultural resources compliance issues, all new work orders that are entered into the database at the Directorate of Support Services (DSS) Work Reception Branch. The Coordinator provides the CRM with DSS Work Order Summaries of all projects that qualify as a federal undertaking IAW Section 106 of the NHPA. The CRM will review the Work Order Summaries to determine if the project area has been surveyed, and whether or not there are known sites within the project APE. If it is determined by the CRM that a survey is required, or if more information is needed to make that determination, the CRM, through the Coordinator, will notify the project manager of the specific Section 106 survey requirements that must be met before the project may proceed.



To take into account the effects of Army actions on historic properties, one or more of three separate activities will occur:

- 1) **Identification:** The Army will conduct project-specific assessments for major excavations, construction, and maintenance not exempted from review in an attachment to this management action.
- 2) **Evaluation:** Until commitments for broad-scale evaluations of historic properties are fulfilled, the Army will use available information on historic properties significance as it plans major excavations, construction, maintenance, and training activities. When the Army is unable to avoid or protect historic properties discovered in project-specific inventories, it will evaluate such properties for NRHP eligibility, if an evaluation has not been completed. The Army will plan such evaluation in consultation with the MSHPO, and for those sites that are of potential value to Native Americans as specified below. In determining the eligibility of historic properties for inclusion in the NRHP IAW 36 C.F.R. 800.4(c), the Army will consult with MSHPO and, when appropriate, Native Americans and will refer to inventories and planning by the State of Missouri, the Army's history and traditions, and previous surveys of historic properties. If the Army and MSHPO fail to agree upon the NRHP eligibility of a resource, or if the ACHP or the Secretary of the Interior so request, the Army will obtain a final determination of eligibility from the Secretary of Interior pursuant to 36 C.F.R. 800.4(c)(4).
- 3) **Management and Treatment:** If there are historic properties present in the project APE, the CRM will evaluate the historic properties IAW the procedures outlined in 36 CFR § 800.4(c) and take the following actions:
  - a) If the historic property is determined not eligible for the NRHP, the CRM will issue a Determination of No Effect and notify the project manager.
  - b) If the historic property is determined to be eligible or potentially eligible for the NRHP, the following procedures will be implemented:
    - (1) The CRM and the project manager may agree upon a plan for avoiding adverse effect to the historic properties. Such plans may be developed in consultation IAW Section 106. The CRM will notify the project manager that an archaeologist must monitor all mechanical or other excavations in the project APE and will periodically inspect the historic properties in the project APE to determine the success of the avoidance strategy.
    - (2) If the historic properties can be avoided by relocation of the project to an alternate site, Section 106 review procedures of the new site will be initiated IAW Section 1 of this SOP.
    - (3) If adverse effect to the historic properties cannot be avoided, the CRM will initiate consultation with the MSHPO and other parties IAW 36 CFR § 800.5(e). Consultation may result in a Memorandum of Agreement (MOA) IAW 36 CFR § 800.5(e)(4). If one of the consulting parties terminates consultation, FLW will request ACHP comments pursuant to 36 CFR § 800.6(b). FLW shall consider the ACHP comments in reaching a final decision on the proposed undertaking. The CRM shall ensure that the results of the final decision are reported to the ACHP IAW 36 CFR § 800.6(c)(2).

The following procedures will be used if there are no identified historic properties in the project APE:

- 1) If an archaeological survey has been completed and the area has little or no potential for deeply buried archaeological sites as determined by the FLW archaeological site predictive model, the CRM will notify the project manager, through the Coordinator, that Section 106 compliance is complete. NOTE: For all actions required beyond this point, the CRM will notify the project manager directly.

- 2) If an archaeological survey has been completed, but the area has a potential for deeply buried archaeological sites as determined by the FLW archaeological site predictive model, the CRM will notify the project manager that an archaeologist will monitor all mechanical or other excavations in the project APE. If cultural resources are discovered during the monitoring process, the procedures outlined in SOP #6 for the Inadvertent Discovery of Archaeological Deposits will be implemented.
- 3) If no archaeological survey has been completed, the CRM will conduct a Phase I survey following the procedures outlined in SOP #4, Field Survey Procedures. The CRM will notify the project manager of the survey results.

In any consultation with the MSHPO and the ACHP, the Army will give particular attention to the requirements of the American Indian Religious Freedom Act (AIRFA) and Native American Graves Protection and Repatriation Act (NAGPRA) and, when applicable, include Native Americans in the consultation. The Army will consult with the Native Americans, MSHPO, and ACHP to take such actions as feasible and prudent to advance the purposes of AIRFA, NAGPRA, and the NHPA.

The CRM will routinely monitor the effectiveness of the coordination procedures by visiting project sites that are within 100 meters of historic properties or that are located in areas likely to contain deeply buried archaeological sites as identified by the FLW archaeological site predictive model. Inadvertent damage to historic properties will be reported to the MSHPO IAW SOP #6.

### 5.1.2 SOP # 2: Section 110 Compliance

**Overview:** Compliance with Section 110 (16 U.S.C. 470h-2) of the NHPA requires that Federal agencies compile an inventory of historic properties whose significance is measured by eligibility for listing in the NRHP, and manage them to preserve their historic, archaeological, architectural, and cultural value. Historic properties include archaeological sites, buildings and structures, landscapes, and potential sacred sites. As of FY2001, (84%) of FLW lands have been surveyed for archaeological sites. The inventory of historic buildings and structures is current and listed above.

**Policy:** Section 110 of the NHPA requires that Federal agencies assess the importance of historic (including archaeological) properties and assume responsibility for the preservation of significant properties. They are significant if they meet the criteria for inclusion on the NRHP. The Army shall evaluate all known historic properties to determine which are important enough to meet the criteria for nomination to the NRHP. This function is performed by the CRM who will maintain an up-to-date GIS and site file database located in the Natural Resources Branch Office. The criteria are specified in 36 C.F.R. Part 60. These criteria refer to historic properties:

**Criterion A:** Properties that are associated with events that have made a significant contribution to the broad patterns of our history; or

**Criterion B:** Properties that are associated with the lives of persons significant in our past; or

**Criterion C:** Properties that embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose component may lack individual distinction; or

**Criterion D:** Properties that have yielded, or may be likely to yield, information important in prehistory or history.

#### Criteria Considerations

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria of if they fall within the following categories:

(a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

(b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

(c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.

(d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

(e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

(f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

(g) A property achieving significance within the past 50 years if it is of exceptional importance. This exception is described further in NPS "How To" #2, entitled "How to Evaluate and Nominate Potential National Register Properties That Have Achieved Significance Within the Last 50 Years" which is available from the National Register of Historic Places Division, National Park Service, United States Department of the Interior, Washington, D.C. 20240.

To date, 544 archaeological sites have been recorded within installation boundaries. Of these, 352 are prehistoric and 169 are historic. Twenty-three sites contain both prehistoric and historic remains. Of the 544 total sites, 279 (51%) are eligible or potentially eligible to the National Register of Historic Places (NRHP) and should be afforded protection under the National Historic Preservation Act. The maps shown in Figures 2.3-2.6 are intentionally constructed at a scale to show the entire base and are used for illustrative purposes. If needed, enlargements of particular areas within FLW can be made at the Natural Resources Branch Office. The maps reveal that significant sites tend to cluster along the Big Piney River in the eastern part of the installation and along Roubidoux Creek in the NW and SW portion of the installation. This should alert any planners or military commanders that these areas have significant and potentially significant archaeological sites.

At FLW, 70 prehistoric sites including caves, rock shelters, cairns, petroglyphs (rock art), open-aired bluff top alluvial base camps, and small lithic scatters are eligible for the NRHP. Cave sites, and many of these site types, served several functions through time from intense habitation sites to specialized hunting and processing stations.

Within the 169 historic database, that includes towns, churches, schools, farmsteads, and cemeteries, few have received eligible or potentially eligible NRHP status. Although formal Phase II NRHP testing is needed on historic sites such as farmsteads, five sites have been considered as NRHP eligible due to the lack of disturbances, intact foundations, and/or archival research.

Potentially Eligible National Register (PENR) sites need further investigation to support a NRHP designation. Verification of NRNP status is most often in the form of Phase II archaeological testing. The classification of PENR as an NRHP category has recently been dropped by the MSHPO (December 1999); however, its use is still essential to our phased protection of cultural resources.

The remaining 264 sites in the site file database are classified as Not Eligible for the NRHP (NENR). These sites were given this classification after intensive archaeological survey or Phase II testing investigations. A determination of not eligible indicates the site is not afforded protection under cultural resource laws, and no further archaeological work is needed. Nevertheless, all sites are included in our database and can be used for settlement studies. Isolated artifacts found across the installation are not assigned site numbers but their type and location is included in a GIS database file.

### **5.1.2.1 Inventory Survey for Archaeological Resources**

#### **Procedure**

1. Employ intensive survey methods as defined in the NHPA. Provide a complete list of tasks required for each survey is in the Phase I Archaeological Statements of Work supplied to each Investigator.
2. Develop survey field strategies coherent with the geomorphological and predictive models in Albertson et al. (1995) and Ahler and Albertson (1996) (See Table 2.1). Target certain landforms such as alluvial fans, terraces, and floodplains for deeper testing. Include in each Statement of Work is an appendix that defines the appropriate survey techniques for each allostratigraphic unit or landform.
3. Determine if sites are potentially eligible for listing in the National Register of Historic Places.

4. Add potentially eligible sites to the GIS and site file database as Potentially Eligible to the National Register (PENR) and protect them until they can be further evaluated for eligibility through Phase II testing.

### **5.1.2.2 Archaeological Resource Evaluations**

#### **Procedure**

1. Determine which archaeological sites on FLW meet criteria for listing on the NRHP, including the 155 potentially eligible prehistoric and historic sites.
2. Coordinate determinations of eligibility with the MSHPO and interested parties.
3. Add Eligible to the National Register (ENR) sites to the GIS database.
4. In the case of controversy over eligibility, refer issue to the Keeper of the NRHP for final determination.

### **5.1.2.3 Phase II NRHP Testing Guidelines**

The Phase II NRHP Testing project is designed to comply with NHPA, ARPA and NAGPRA while retrieving important scientific data (Edging and Kriesa 1996; Kreisa et al. 1996). Since 1991, the Environmental Division, CERL and WES have contracted investigations at 62 sites, and of these, 47 (75%) have been deemed eligible to the NRHP. Phase II testing is directed through the use of geophysical survey techniques and traditional Phase II data recovery and analysis. Generally, geophysical techniques are not well integrated into cultural resource management studies; however, a few projects have tested the utility of these methods in an effort to provide preliminary data on excavation locations that will improve chances of recovering intact cultural deposits.

While the NRHP testing project has brought the installation into working compliance with respect to the evaluation and protection of NRHP sites, it has also resulted in the accumulation of significant archaeological data that is now beginning to fill in major gaps in the archaeological record of the northern Ozarks. The accumulation of basic archaeological data (stratigraphy, diagnostic artifacts, paleo-environmental data, and radiocarbon assays) generated from Phase II have greatly increased our knowledge of Archaic hunter-gatherer and late prehistoric adaptations and material culture in the northern Ozarks (Ahler et al. 1995a-b, 1997, 1998, 1999; Kreisa et al. 1995, 1996). A complete list of tasks required for each survey is detailed in the Phase II Archaeological Statements of Work supplied to each Investigator (See Below 6.1.2).

### 5.1.3 SOP #3: Emergency Archaeological Discovery

**Policy:** This SOP is designed for areas, which have been reviewed under the Section 106 Review process, but it can also apply to areas of the post that have been surveyed. If construction has been approved, and new discoveries are found, the requirements in the Archaeological and Historic Preservation Act of 1974 (Public Law 93-291), as amended, will be followed. 36 CFR Part 800.11 discusses emergency discoveries for all historic properties, which must have gone through Section 106 review (see 800.11[c]). There are no time limits. If no survey has been completed (archaeological or architectural) the installation is in violation of Section 106 (see 800.6[d]). Survey work must be done before construction.

**Procedure:**

1. Work shall cease in the area of discovery, and the CRM shall be notified within 24 hours. The property will be treated as eligible for the NRHP, Category I, and avoided until a determination is made.
2. The CRM will notify the MSHPO to provide an opportunity to assess the discovery and respond within 72 hours. The CERL Archaeologist shall receive an information copy.
3. The CRM, CERL, and MSHPO shall enlist the consultation of interested citizens and professionals, as they feel appropriate.
4. The CRM, CERL, NPS, and MSHPO shall agree on procedures to be followed in the context of each discovery.
5. The method of treatment to alleviate adverse impacts will reflect the importance of the historic context, the discovery situation, the impact of the project on the property, and the overall project needs budgetary constraints.
6. The CRM, CERL, and MSHPO should fail to agree on the procedures to be followed or the method of treatment; comments from the ACHP shall be requested.

#### **5.1.4 SOP # 4: Curation of Artifacts and Data**

**Policy:** (See the "Secretary of the Interior's Guidelines for Archaeological Documentation," and 36 CFR 79.) Since 1995, archaeological collections from past and ongoing archaeological projects have been processed and curated at the U.S. Army Corps of Engineers federal repository at the University of Missouri, Columbia.

**Procedure:** Following the completion of the Phase I surveys, and Phase II and III data recovery projects, all supporting documentation (photographs, field notes, excavation records, etc.) should be curated with the artifacts (See Above). Archaeological Survey of Missouri (ASM) site survey forms are forwarded to ASM, University of Missouri at Columbia. All survey and testing project Statements' Of Work include a summary of the investigators responsibilities in processing and packaging artifacts (See Appendix B in Section 6 Below).

The CRM ArcView and site file database should be updated following the completion of all projects.

### 5.1.5 SOP # 5: Archaeological Resource Protection Act (ARPA) Compliance

**Overview:** This procedure implements provisions of the Archaeological Resources Protection Act of 1979 (ARPA). Unauthorized disturbances and digging has been a chronic problem on prehistoric sites at FLW. The violation of the Archaeological Resources Protection Act (ARPA) is a felony for persons to excavate, remove, damage, or otherwise deface any archaeological resource located on federal lands. The sale, purchase, or transfer of artifacts obtained in violation of the law is also a felony. The regulations contain definitions and guidelines for the enforcement of the act and set forth procedures and standards for the compliance and scientific investigations at archaeological sites.

**Policy:** In 1992 and again in 1998, severe looting of the Saltpeter, Joy, and Davis Caves and Kerr Cave resulted in a damage assessment conducted by the CRM and Game Wardens. Saltpeter and Joy Caves also contain endangered bat species. The archaeological damage assessments are on file and serve as a basis for future ARPA violation investigations (Edging 1993, 1998). In 1999, looting occurred at Dead Man's Cave; however, no ARPA investigation was undertaken. Photographs of the looter pits were taken and a site map was drawn. The looter pit was backfilled. Dead Man's Cave is included in our monthly monitoring round of NRHP sites and no looting has been recorded since the 1999 violation. It is crucial that Game Warden and Natural Resource personnel receive training in the treatment of ARPA violations. The full 40-hour course of the Federal Law Enforcement Training Center has been offered at FLW in 1991 and 1993. With the arrival of new personnel on post, and with requests from other agencies, it would be beneficial to host another course as soon as possible. The CRM and other Environmental Division personnel have completed both courses. It will be the responsibility of the FLW Commander to ensure that law enforcement personnel enforce ARPA.

The dissemination of the location of archaeological sites is to be restricted to appropriate installation personnel and under the review of the CRM. GIS and site file access will be restricted and no published archaeological reports shall contain site locational information but will be included as a separate appendix on file at the Natural Resource Branch Office.

The use of metal detectors and subsequent digging threatens the integrity of historic archaeological sites as stated in the installations Historic Preservation Plan (1992:94) approved by MSHPO. In addition, FLW Regulation 210-14:7 3-8 regarding recreational activities states in accordance with AR 405-80 that metal detecting as a recreational activity at FLW is prohibited except by permit. The intent is to restrict metal detecting as a recreational activity not during military and scientific projects. The growth of the training mission at FLW also makes unauthorized disturbances or digging a security risk for both civilian and military concerns.

**Archaeological Credential Evaluation and Permit Procedures:** The CRM will evaluate professional or institutional archaeological credentials and consider whether the proposed investigations will conflict with military missions or biological projects and if the investigation is in accordance with other public or military use of the land in question. The qualifications of the individual or institution proposing any archaeological investigation need to be considered. The qualifications for granting archaeological investigations in compliance with ARPA include a graduate degree in archaeology or anthropology or equivalent experience, a demonstrated ability to carry out the work, at least 16 months of professional experience, and at least one year of historic archaeological experience to conduct historic archaeological investigations. The CRM will monitor the work conducted to assure compliance with the terms of the contract.

Exceptions to this procedure are the formal permitting process for institutions and individuals conducting archaeological research on the installation not directed from the Environmental Division. In the event an outside agency or individual conducts such research, they may apply for a permit through the Corps of Engineers District Commander in Kansas City. Ultimately, the Garrison Commander and MACOM TRADOC must approve the application for permit.



**Vandalism Procedures:** The Commanding General or his delegate will enforce the law where vandalism or looting can be proved. In cases where there is inadequate proof to obtain a felony conviction, the Commanding General or his delegate may choose to assess a Civil Penalty under provisions of 32CFR229.15.

ARPA violations are documented through a site monitoring program begun in 1997 that documents all disturbances in a systematic round of site visits throughout each year. Return visits are made to repair minor damage to the sites. All monitoring and ARPA information is kept in a monthly log and a GIS map is updated periodically. This information is kept on file in the Natural Resource Office and included in the annual CRM report submitted to the MSHPO and TRADOC.

### **5.1.6 SOP # 6: Inadvertent Discovery of Native American Human Remains and Associated Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony**

**Overview:** FLW is engaged in a continuing archaeological survey and inventory of the cultural resources within its boundaries. Eighty-four percent (84%) of the installation has been surveyed for prehistoric Native American and historic Anglo American sites. Although areas remain on the installation where ground-disturbing activity has the potential for uncovering unreported archaeological deposits, certain locations are considered Native American burial areas. Any ground-disturbing activity in caves, rockshelters and/or cairns has a high probability of encountering Native American human remains and funerary objects. Rock Art in association with these sites also represents a potentially sacred site within a ritual complex and should be treated as such. In accordance with the Native American Graves Protection and Repatriation Act (NAGPRA), such human remains and cultural objects must be identified, if possible, as to lineal descendants or culturally affiliated contemporary tribes, treated in a manner deemed appropriate by the lineal descendants or culturally affiliated tribes, and repatriated to legitimate claimants.

Since 1995, archaeological collections from past and ongoing archaeological projects have been processed and curated at the Corps of Engineers federal repository at the University of Missouri, Columbia. All Native American human remains and funerary objects from FLW are housed at the University of Missouri facility. Burial sites such as cairns are exempt from investigations and are protected under the Archaeological Resources Protection Act.

SOP #6-8 outline procedures to be followed in the event of an inadvertent discovery of Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony; in planning an excavation that has the high potential to result in the discovery of Native American human remains and cultural objects; and in dealing with the treatment and disposition of Native American human remains and cultural objects. Appended to these SOP are a list of the referenced legislation, executive orders, and presidential memoranda; sample memoranda for notification of the installation commander and Indian tribes; and a list of official tribal contacts.

This SOP is an internal document only. As such it is intended solely to improve the internal workings of the FLW staff and does not in any way create any right or cause of action to any party.

#### **Definitions**

1. Burial site means "any natural or prepared physical location, whether originally below, on, or above the surface of the earth, into which as a part of the death rite or ceremony of a culture, individual human remains are deposited, and includes rock cairns or pyres which do not fall within the ordinary definition of grave site" [43 C.F.R. 10.2(d)(2)].
2. Cultural affiliation means "that there is a relationship of shared group identity which can reasonably be traced historically or prehistorically between members of a present-day Indian tribe or Native Hawaiian organization and an identifiable earlier group" [43 C.F.R. 10.2(e)].
3. Funerary objects means "items that, as a part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at the time of death or later with or near individual human remains. Funerary objects must be identified by a preponderance of evidence as having been removed from a specific burial site of an individual affiliated with a particular Indian tribe or Native Hawaiian organization or as being related to specific individuals or families or to known human remains" [43 C.F.R. 10.2(d)(2)].
4. Sacred objects means "items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present day adherents. While many items, from ancient pottery shards to arrowheads, might be imbued with sacredness in the eyes of an individual, these regulations are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and which have religious significance or function in the continued observance or renewal of such ceremony" [43 C.F.R. 10.2(d)(3)].

5. Objects of cultural patrimony means "items having ongoing historical, traditional, or cultural importance central to the Indian tribe or Native Hawaiian organization itself, rather than property owned by an individual tribal or organization member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by any individual tribal or organization member. Such objects must have been considered inalienable by the culturally affiliated Indian tribe or Native Hawaiian organization at the time the object was separated from the group" [43 C.F.R. 10.2(d)(4)].

6. Indian tribe means "any tribe, band, nation, or other organized group or community of Indians, including any Alaska Native village or corporation as defined in or established by the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians" [43 C.F.R. 10.2(b)(2)].

7. Intentional excavation means "the planned archaeological removal of human remains, funerary objects, sacred objects, or objects of cultural patrimony found under or on the surface of Federal or tribal lands pursuant to section 3(c)" of NAGPRA [43 C.F.R. 10.2(g)(3)].

8. Inadvertent discovery means "the unanticipated encounter or detection of human remains, funerary objects, sacred objects, or objects of cultural patrimony found under or on the surface of Federal or tribal lands pursuant to section 3(d)" of NAGPRA [43 C.F.R. 10.2(g)(4)]. According to this definition, if an object is recovered that is not recognized as defined under NAGPRA when found, but is subsequently identified during laboratory analysis, this qualifies as "detection" and therefore constitutes inadvertent discovery.

9. For the purposes of this SOP, the term "cultural objects" specifically refers to funerary objects, sacred objects, and objects of cultural patrimony.

10. For the purposes of this SOP, "tribal contacts" means the tribes that are listed in Section 4.1.11.

**Policy:** The intent of NAGPRA is to protect, identify proper ownership, and to ensure the rightful disposition of Native American human remains and cultural objects that are discovered on federal or tribal lands. NAGPRA requires that certain procedures be followed when there is an intentional excavation or inadvertent discovery of Native American human remains and cultural objects. In the event of a discovery of Native American human remains or cultural objects, the FLW commander will ensure compliance with NAGPRA [25 U.S.C. 3001-3013, 43 C.F.R. 10] and any applicable statutory and regulatory requirements of the AIRFA [42 U.S.C. 1996-1996a], ARPA [16 U.S.C. 470aa-470ll], NEPA [42 U.S.C. 4321-4370c], and NHPA [16 U.S.C. 470-470w] as well as White House Memorandum, 29 April 1994. Each statute mandates compliance with independent requirements. Compliance with one statutory requirement therefore may not satisfy other applicable requirements.

The FLW CRM will coordinate with the Staff Judge Advocate (SJA), Criminal Investigation Directorate (CID), Provost Marshal's Office (PMO), Operations and Training (G3), Range Control, Master Planning, Department of Public Works (DPW), and Forestry to ensure that the CRM (1) is incorporated in the planning of training and construction to assess the potential for the discovery of Native American burials and archaeological sites, and (2) is identified as the point-of-contact to be notified immediately if a Native American burial or archaeological site is inadvertently discovered on installation property.

In addition to ground disturbing activities such as training operations, construction, and archaeological excavations, erosion by wind or water may result in the discovery of human remains and cultural objects. If Native American remains and cultural objects are discovered, any work within a 50-foot radius of the site shall be halted and the CRM (596-7607) shall be notified immediately. The site will be protected and stabilized. Any removal of material is prohibited and constitutes a violation of NAGPRA and the ARPA. The CRM, in consultation with qualified professionals as necessary, will initially evaluate the site and report the finding to the installation commander and the potentially culturally affiliated Indian tribes, and installation offices, the MSHPO, and the Pulaski County Sheriff when appropriate. Any subsequent treatment of the remains and objects or stabilization of the site will be carried out only after consultation

with the potentially affiliated tribes.

**Procedure:**

If an inadvertent discovery of Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony occurs on FLW:

- 1) Carry out preliminary assessment, protection, and identification of human remains to determine if NAGPRA applies.
  - a) Visit the site as soon as practical within twenty-four (24) hours of the discovery, to determine if the remains are (1) associated with a recent crime scene and (2) if not, whether the remains are of a person of Native American descent.
  - b) If, upon examination, the remains are identified as non-human, determine if archaeological contexts are present that need to be evaluated pursuant to Section 106 [36 C.F.R. 800] of the National Historic Preservation Act [16 U.S.C. 470-470w].
  - c) If, upon examination, the remains appear to be human and associated with a crime scene of 75 years old or less, notify the Provost Marshal's Office (PMO) and the Criminal Investigation Division (CID) on post and the Pulaski County Sheriff's Department. All activities will cease within the area of the inadvertent discovery. Protect the site and declare it off limits to everyone except authorized personnel. The area of protection should cover no less than a 50-foot radius around the site as required by Section 194.406.2, RsMo. The CID will assume custody of the remains and notify the proper authorities.
  - d) If, upon examination, the remains appear to be human, but are not associated with a crime scene, or if all law enforcement officials contacted have determined that the remains will not be involved in a legal investigation, contact the MSHPO, in compliance with Sections 194.400-194.410, RsMO. The procedure is applied whether or not the remains are Native American.
  - e) If after consultation with the MSHPO, the remains are determined to be Native American, make a written field evaluation of the circumstances of the discovery, the condition and contents of the burial, including any artifacts, the primary context of the remains and any artifacts, and their antiquity and significance. Evaluate the human remains and cultural objects in situ. Destructive analysis is prohibited, unless consultation with lineal descendants or affiliated Indian tribes has been completed. Protect the site according to standard installation practice for archaeological discoveries. Stabilize or cover the site, if necessary. Do not remove any material until compliance with NAGPRA is completed.
- 2) Notify the Installation Commander of the inadvertent discovery immediately, follow-up notification with a written report following the Template in Attachment B, and receive written confirmation of the receipt of the notification within 48 hours of the initial discovery.
- 3) Notify the appropriate lineal descendants or Indian tribes within 3 working days after receipt of written notification by the installation commander of the discovery of Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony.
  - a) Notify by telephone and in writing. Include a copy of the field evaluation. Send the notice by certified mail to the lineal descendant or tribal government official with a copy furnished to the NAGPRA contact person designated by the tribe. Make a follow-up phone call to the lineal descendants or NAGPRA coordinators of the Indian tribes contacted to determine if written notification of the discovery was received and to ascertain how the tribe wishes to proceed in determining cultural affiliation, treatment, and disposition of the human remains or cultural objects.

- b) Compile a List of Tribal Contacts based on priority of ownership of Native American human remains and cultural objects pursuant to 25 U.S.C. 3002(a) and 43 C.F.R. 10.6. Priority of ownership is as follows:
  - i. Lineal descendants, as determined pursuant to 43 C.F.R. 10.14(b)
  - ii. Indian tribe holding tribal lands, as defined in 43 C.F.R. 10.2(f)(2)
  - iii. Culturally affiliated Indian tribe, as defined in 43 C.F.R. 10.14
  - iv. Indian tribe recognized as the aboriginal owners of the land by a final judgment of the Indian Claims Commission or the United States Court of Claims
  - v. Indian tribe with the strongest demonstrated cultural relationship
- c) Refer to the List of Tribal Contacts, which will be verified and/or updated annually in coordination with tribal election schedules. The list is provided in Attachment C.
- 4) Determine lineal descendants or affiliated Indian tribes in consultation with potential lineal descendants and affiliated Indian tribes.
  - a) Follow criteria for determining cultural affiliation listed in 43 C.F.R. 10.14.
  - b) Send preliminary determination of lineal descendants or closest tribal affiliation to the previously notified lineal descendants or tribes to review. Propose a time and place for consultations. Identify and consult with traditional religious leaders, if possible. Arrange for a site visit if requested by the tribes. Provide a list of all Indian tribes consulted to each consulting tribe.
- 5) Document the consultation in a written plan of action IAW 43 C.F.R. 10.5(e) signed by the installation commander or his designee.
  - a) Provide copies of the written plan of action to the consulting lineal descendants and Indian tribes.
  - b) Include the following information in the written plan of action:
    - i. Kinds of material to be considered as cultural objects as defined in 43 C.F.R. 10.2(d);
    - ii. Specific information used to determine custody pursuant to 43 C.F.R. 10.6;
    - iii. Treatment, care, and handling of human remains and cultural objects;
    - iv. Archaeological recording of the human remains and cultural objects;
    - v. Kinds of analysis for identification of human remains and cultural objects;
    - vi. Steps to be followed to contact Indian Tribe officials at the time of an inadvertent discovery or before any excavation of human remains or cultural objects;
    - vii. Kind of traditional treatment to be afforded the human remains or cultural objects;
    - viii. Nature of the reports to be prepared; and
    - ix. Disposition of human remains and cultural objects IAW 43 C.F.R. 10.6.
- 6) Pursuant to 43 C.F.R. 10.4(d)(2), resume activity thirty (30) days after certification by the installation commander of the receipt of the notification sent by the CRM, if otherwise lawful. Resume activity only after notifying the MSHPO and local law enforcement officials.
  - a) Evaluate any impacts to the site pursuant to Section 106 [36 C.F.R. 800] of the National Historic Preservation Act [16 U.S.C. 470-470w].
  - b) Consider the need for assessing the activity under the National Environmental Policy Act (NEPA).

- c) Remove or excavate Native American human remains and cultural objects in accordance with 43 C.F.R. 10.3.
- 7) Or, document the treatment of remains and cultural objects in a written binding agreement between the installation and the affiliated Indian tribes that adopts a plan for stabilization and protection of the site with no removal of human remains and cultural objects, excavation or removal of the human remains or cultural objects in accordance with 43 C.F.R. 10.3, or their disposition to lineal descendants or Indian tribe/s with priority of custody as defined in 25 U.S.C. 3002(a) and 43 C.F.R. 10. Notify the MSHPO and local law enforcement officials before resuming activity.
- 8) Follow SOP #8, Treatment and Disposition of Native American Human Remains, Funerary Objects, Sacred Objects, and Objects of Cultural Patrimony.

### **5.1.7 SOP #7: Intentional Archaeological Excavation of Native American Human Remains, Associated Funerary Objects, Sacred Objects, and Objects of Cultural Patrimony**

**Overview:** FLW is engaged in a continuing archaeological survey and inventory of the cultural resources within its boundaries. Archaeological activities include survey for sites to be included on the inventory required under Section 110 of the NHPA [16 U.S.C. 470-470w], evaluation of sites under Section 106 of the NHPA by determining their eligibility for the NRHP and their significance [36 C.F.R. 60, 36 C.F.R. 63], and the mitigation of sites eligible for the NRHP that cannot be protected from destruction.

The definitions provided in the Introduction of Standard Operating Procedure (SOP) #6 apply.

**Policy:** FLW must comply with NAGPRA [25 U.S.C. 3002] and its regulations [43 C.F.R. 10.3], which require that Native American human remains, associated funerary objects, sacred objects, and objects of cultural patrimony be excavated or removed only after consultation with the appropriate Indian tribes that have priority of custody over these items. Also, according to 43 C.F.R. 10.3 (c)(1), the FLW commander, as the responsible federal agency official, must take reasonable steps to determine whether a planned activity may result in the excavation of Native American human remains and cultural objects. For the purposes of this SOP, any excavation in caves is considered to have a high potential for the discovery of Native American burials. Thus, consultation with the tribe/s having priority of custody of human remains and cultural objects is required prior to conducting any excavation of this nature. All notification and consultation shall be carried out with tribal governments in compliance with White House Memorandum, 29 April 1994, Government-to-Government Relations with Native American Tribal Governments. Excavation of Native American human remains and cultural objects is also subject to review under Section 106 [36 C.F.R. 800] of the NHPA [16 U.S.C. 470-470w]. Consideration under NEPA is required as described in Army Regulations (AR) 200-2. While mere investigation to determine the presence of NAGPRA material does not require an environmental assessment pursuant to a categorical exclusion (A-18), excavation of such material may require an environmental assessment (EA) or even an environmental impact statement (EIS) under some circumstances.

#### **Procedure:**

If intentional excavation of Native American human remains, funerary objects, sacred objects or objects of cultural patrimony is planned:

- 1) Provide written notification to Indian tribes that are likely to be culturally affiliated, aboriginal occupied the area, or are likely to have a cultural relationship with the human remains and/or cultural objects that may be excavated. Refer to the List of Tribes in Section 4.1.10.
  - a) Describe in the notification the planned activity, its general location, the basis for the determination that human remains and cultural objects may be encountered during excavation, and the basis for the determination of likely custody pursuant to 43 C.F.R. 10.6. Propose a time and place for meetings or consultations and the possible treatment and disposition of the human remains and cultural objects.
  - b) If no response to the notification is received in fifteen (15) days, make a follow-up telephone call.
- 2) Consult about priority of custody of the remains and/or cultural objects, and their treatment and disposition, pursuant to 43 C.F.R. 10.5.
- 3) Document the consultation in a written plan of action IAW 43 C.F.R. 10.5(e) signed by the installation commander or his designee, which the consulting tribes have the option to sign.
- 4) If applicable, before proceeding, ensure that removal of Native American human remains, associated funerary objects, sacred objects, or objects of cultural patrimony does not occur until after (a) a permit is issued pursuant to the Archaeological Resources Protection Act [16 U.S.C. 470aa-470ll], or

(b) compliance with Section 106 [36 C.F.R. 800] of the National Historic Preservation Act [16 U.S.C. 470-470w] is carried out.

- 5) Follow SOP #8, Treatment and Disposition of Native American Human Remains, Funerary Objects, Sacred Objects, and Objects of Cultural Patrimony.



### **5.1.8 SOP # 8: Treatment and Disposition of Native American Human Remains, Associated Funerary Objects, Sacred Objects, and Objects of Cultural Patrimony**

**Overview:** Specifying treatment and disposition of Native American human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered on Army lands rests with lineal descendants or Indian tribes that can demonstrate priority of ownership as outlined in NAGPRA [25 U.S.C. 3002, 43 C.F.R. 10.6].

The definitions provided in the Introduction of Standard Operating Procedure (SOP) #6 apply.

**Policy:** Identification of Native American human remains and cultural objects occurs first in consultation with potential lineal descendants or Indian tribes that can demonstrate priority of ownership as outlined in NAGPRA. All notification and consultation shall be carried out with tribal governments in compliance with White House Memorandum, 29 April 1994, Government-to-Government Relations with Native American Tribal Governments.

If the Army, in consultation with lineal descendants or federally recognized tribes, determines that an asserted claim is legitimate, the lineal descendants or tribe(s) may specify treatment and disposition. If ownership cannot be assigned to one tribe due to lack of a preponderance of evidence, then the responsibility of treatment and disposition may lie with multiple tribes. If there are no legitimate claimants, the Departmental Consulting Archaeologist, Archaeological Assistance Division, National Park Service will be notified and the human remains and cultural objects will be protected in situ, or if that is not possible, will be removed and stored in a facility agreeable to the consulting parties, pending the appearance of legitimate claimants.

In instances where there is a dispute as to the ownership of human remains and cultural objects, the installation shall safeguard them until the dispute is resolved in accordance with 43 C.F.R. 10.17. The FLW commander shall notify the Major Command (MACOM) in the event of a dispute regarding custody of human remains and cultural objects. All activities carried out to comply with NAGPRA and 43 C.F.R. 10 shall only occur with federally recognized Indian tribes and lineal descendants as defined and provided for by NAGPRA.

#### **Procedure:**

Protocol for the treatment and disposition of Native American human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently on FLW:

- 1) Determine treatment and disposition of any Native American human remains and cultural objects recovered inadvertently from FLW lands only in consultation with lineal descendants or Indian tribes that can demonstrate priority of custody as outlined in NAGPRA.
- 2) Be aware that a tribe that wishes to claim custody of human remains or cultural objects must be able to meet one of the criteria listed in 43 C.F.R. 10.6. Guidelines for determining the preponderance of evidence are found in 43 C.F.R. 10.14.
- 3) If a single, legitimate claimant cannot be identified, continue consultation with the previously consulted tribes to consider possible alternatives for affiliation, treatment, and disposition. Retain the material in a safe and secure manner agreeable to the consulting parties as required by 43 C.F.R. 10.6(c) and 10.15 until a plan for the treatment and disposition of the Native American human remains and cultural objects pursuant to 43 C.F.R. 10 can be specified.
- 4) If no agreement can be reached, refer to dispute resolution below.
- 5) If the consulting parties determine that the in situ restoration of a burial site is not feasible, repatriate the contents of the burial to the lineal descendants or appropriate tribe/s, following the process outlined in 43 C.F.R. 10.6. This process includes:

- a) Prior to the disposition of human remains and cultural objects, publish notices of the proposed disposition in a newspaper of general circulation in the area in which the human remains and cultural objects were discovered and in which the lineal descendants or affiliated Indian tribe/s currently reside.
  - b) Provide information in the notice as to the nature and affiliation of the human remains, funerary objects, sacred objects, or objects of cultural patrimony and solicit further claims to custody. Give the consulting tribes an opportunity to review the content of the notice before its publication. Do not include privileged information in the notice.
  - c) Publish the notices twice at least a week apart. Provide the Departmental Consulting Archaeologist, Archeological Assistance Division, National Park Service with a copy of the notice and information on when and in what newspaper/s the notice was published.
  - d) Wait at least thirty days after the publication of the second notice before repatriating the human remains and cultural objects. If additional claimants come forward and custody cannot be clearly determined, do not transfer custody of the human remains and cultural objects until the proper recipient is determined pursuant to 43 C.F.R. 10.
- 6) Provide an opportunity for appropriate tribal religious ceremony or ceremonies pursuant to the American Indian Religious Freedom Act (AIRFA) [42 U.S.C. 1996-1996a] and Executive Order 13007 for each restoration and reinterment.
  - 7) If a claim is made for human remains and cultural objects, notify all of the tribes that were involved in the consultations regarding their disposition.
  - 8) Unclaimed Native American human remains and cultural objects shall be returned in accordance with the regulations developed by the NAGPRA Review Committee.

Dispute resolution regarding NAGPRA compliance:

- 1) Resolve all disputes regarding the cultural affiliation of discovered human remains and/or cultural objects in accordance with Sections 3 and 7(e) of NAGPRA and the implementing regulations 43 C.F.R. 10.
- 2) Follow the procedures set forth in this document regarding consultation with the interested tribes. Should any interested tribe make a conflicting claim of cultural affiliation or dispute the methods of treatment or disposition of human remains and/or cultural objects as delineated herein, notify Forces Command and discuss resolution.
- 3) Continue consulting with the disputing parties, suggest that the disputing parties seek resolution among themselves, and, if the disputing parties concur, go before the NAGPRA Review Committee which is given the authority under 25 U.S.C 3006(c)(4) and 43 C.F.R. 10.16 and 10.17 to make recommendations on the resolution of disputes.
- 4) If, upon receipt of the recommendations of the Review Committee, the most appropriate claimant still cannot be determined, retain the disputed remains or cultural objects until the question of custody is resolved, as stated in 43 C.F.R. 10.15(a)(2).

### 5.1.9 SOP # 9 Assessing Military Landscapes

**Overview:** Historic and archaeological properties on military installations are usually identified as single properties (an historic building, an archaeological site, etc.). This approach advocates a more comprehensive assessment of the overall area, i.e., a “regional” perspective. Historic landscapes are sites or districts that often include other historic property types such as structures, buildings and objects. Landscapes are not individual components like a building or a structure. Rather, they are areas that take into account the relationships among important characteristics of the landscape.

**Policy:** Historic Military Landscapes can be nominated as either sites or districts. The NHPA recognizes the following general property and resources types relevant to the military landscape:

**Site:** The location of a significant event, a prehistoric or historic occupation or activity, or building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value, regardless of the value of any existing structure. Examples include a parade ground, cemetery, garden, or testing area.

**District:** A significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. Examples include large forts, airfields, cantonment areas, medical facilities, residential areas, shipyards, or entire installations.

**Building:** A type of structure created principally to shelter any form of human activity, such as a barracks, storehouse, school, hangar, clubhouse, chapel, laboratory, or similar construction. “Building” may also be used to refer to a historically and functionally related unit, such as a combination barracks and mess hall.

**Structure:** A functional construction made for purposes other than creating human shelter. The term “structure” is used to distinguish buildings from fuel tanks, docks, bridges, magazines, palisade fortifications, boats, ships, airplanes, etc.

**Object:** A construction that is primarily artistic in nature or is relatively small in scale and simply constructed. The term “object” is used to distinguish from buildings and structures items such as monuments, cannons, or boundary markers. Although objects may be movable, by nature or design, they are associated with a specific setting or environment.

**Themes:** The NRHP has established standardized areas of significance that are useful in developing historic contexts, for example health/medicine, transportation, military, or planning and architecture. Themes are associated with the particular area of significance and for a military property may include topics such as Cold War, Military Training or World War II mobilization.

## **5.1.10 ATTACHMENT A: TEMPLATE FOR MEMORANDUM OF NOTIFICATION OF THE INSTALLATION COMMANDER**

### **PURPOSE:**

1. To notify the FLW Commander that Native American human remains and/or cultural objects have been inadvertently discovered on FLW.
2. Recommend an action plan that implements requirements of the Native American Graves Protection and Repatriation Act (NAGPRA) [25 U.S.C. 3001-3013, 43 C.F.R. 10], outlined in the NAGPRA Standard Operating Procedures (SOP), #6-8.
3. Request certification of this notification by the Commander to be directly forwarded to the CRM.

### **SITUATION:**

1. Describe circumstances of discovery: By whom, where, and how were Native American human remains and/or cultural objects discovered on the installation.
2. Describe discovered items: condition and contents of the burial, including any grave goods; the primary context of the remains and any artifacts, including site location described according to standard FLW archaeological practice; probable antiquity and significance of the remains and/or cultural objects.

### **ACTION PLAN:**

1. Continue to protect the site.
2. Receive certification of notification from the FLW Commander by the CRM within forty-eight (48) hours of receipt of this notification by his office.
3. Notify the Indian tribes listed in Appendix C of the discovery by telephone and written report within three working days after receipt of certification of notification from the Commander.
4. Inform each notified tribe of the names of the other tribes being consulted.
5. Consult with the Indian tribes listed in Attachment C about the cultural affiliation, treatment, and disposition of the remains and/or objects.
6. Document the decisions made as a result of consultation in a written plan of action or implement a prior Comprehensive Agreement (CA) as specified in NAGPRA SOP #6, Identification of Native American Remains, numbers 5 and 6.
7. Carry out treatment and disposition of remains and/or objects as agreed upon in consultations according to the process outlined in NAGPRA SOP #8.

## 5.1.11 ATTACHMENT B: LIST OF TRIBAL CONTACTS

### **Kaw Nation:**

Ms. Wanda Stone

Chairperson

Kaw Business Committee

Drawer 50

Kaw City, OK 74641

Mr. James Pepper Henry

NAGPRA Representative

Kaw Nation

Drawer 50

Kaw City, OK 74641

Phone: 405-269-2552

FAX: 405-269-2301

### **Omaha Tribe:**

Mr. Gary Lasley

Chairman

Omaha Tribal Council

P.O. Box 368

Macy, NE 68039

Phone: 402-837-5391

FAX: 402-837-5308

Ms. Melissa Robinson

NAGPRA Coordinator

Box 393

Walthill, NE 68067

Phone: 402-846-5008

### **Osage Tribe:**

Mr. George Tallchief

President

Osage Nation of Oklahoma

627 Grandview Avenue

Pawhuska, OK 74056

Mr. Leonard Maker

NAGPRA Representative

Osage Tribe of Oklahoma

627 Grandview Avenue

Pawhuska, OK 74056

Phone: 918-287-2086

e-mail: [lmaker@galstar.com](mailto:lmaker@galstar.com)

### **Otoe-Missouria Tribe**

Raymond Butler

Chairman

Otoe-Missouria Tribal Council

RT. 1, Box 62

Red Rock, OK 74651

Phone: 405-723-4466

FAX: 405-723-4273

**Ponca Tribe of Oklahoma**

Mr. Lionel Leclair

Chairperson

Ponca Tribal Business Committee

P.O. Box 2, White Eagle

Ponca City, OK 74601

Mr. Louis V. Headman

Language Coordinator

Ponca Tribe of Oklahoma

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Ponca City, OK 74601

Phone: 405-765-0628

FAX: 405-763-0126

**Ponca Tribe of Nebraska**

Ms. Deb Wright

Chairperson

Ponca Tribe of Nebraska

P.O. Box 288

Niobrara, NE 68760

Mr. Nico Mercier

Director of Cultural Affairs

Ponca Tribe of Nebraska

P.O. Box 288

Niobrara, NE 68760

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FAX: 402-857-3736

**Sac and Fox Tribe of the Mississippi in Iowa**

Jonathan L. Buffalo

Historical Preservation Coordinator

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Tama, IA 52339-9629

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Phone: 515-484-5358

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e-mail: [jbuffalo@iavalley.cc.ia.us](mailto:jbuffalo@iavalley.cc.ia.us)

**Quapaw Tribe**

Mr. Ed Rodgers

Chairperson

Quapaw Tribal Business Committee

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Ms. Carrie V. Wilson

NAGPRA Coordinator

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Quapaw, OK 74363

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## 7.0 APPENDICES

### 7.1.1 STATEMENT OF WORK: Archaeological Survey of 1600 Acres, Fort Leonard Wood (FLW), Pulaski County, Missouri (The following Statements of Work are offered as a guide for future CRM personnel and work).

**1. INTRODUCTION:** Fort Leonard Wood (FLW), a U.S. Army installation in south-central Missouri, has requested the assistance of the Land Management Laboratory of the U.S. Army Construction Engineering Research Laboratories (CERL) in conducting an archaeological survey (Phase I inventory) of selected areas at the installation. The survey will integrate extant predictive models of archaeological site location and landscape-evolutionary geomorphological data into the project research design. The completion of this survey will provide the baseline inventory of prehistoric and historic archaeological sites within the selected regions.

**2. AUTHORITIES:** The Department of Defense (DoD) is the steward of millions of acres of land and the archaeological resources on them. Federal regulations require that DoD installations accomplish their military missions in compliance with cultural resource laws. Compliance with Executive Order 11593, as codified in amendments to the National Historic Preservation Act of 1966 (NHPA), requires complete inventories of all historic properties on federally controlled lands. Additional legislation expands the compliance and stewardship roles of the Army in regard to historic preservation. These acts include the Archeological Resources Protection Act (ARPA), National Environmental Policy Act (PL 91-190), Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act (AIRFA).

**3. OBJECTIVE:** The objective of the work to be performed under this task order is to conduct an archaeological survey of 1600 acres at FLW, Missouri. The survey areas have been selected by FLW and CERL. The purpose of the archaeological survey is to locate, identify, define, and evaluate the need for formal assessments of National Register of Historic Places (NRHP) eligibility of all cultural resources within the defined areas. Additionally, the site locational data generated by this survey shall be used to further evaluate the existing archaeological predictive locational models developed for FLW (Ahler and McDowell 1993; Ahler and Albertson 1996; Ahler et. al. 2000) (See Adams 1997; Kreisa 1999, 2000 for examples of predictive locational model evaluations).

**4. MAJOR REQUIREMENTS:** In order for the Contractor to accomplish the objectives of this task order, it shall be necessary for the Contractor to complete the following tasks:

**a. Task 1.** Develop an archaeological survey research design for the purpose of locating archaeological sites. The Research Design shall be developed in consideration of both the survey requirements presented in Appendix 1 to this SOW and the existing predictive locational models and geomorphic data for FLW (Adams 1999; Ahler and McDowell 1993; Ahler et al 2000; Albertson et. al. 1995; Ahler and Albertson 1996; Kreisa 1999) available through CERL or the FLW Point of Contact (POC). The Research Design shall include, but not be limited to, discussions of the study areas, generalized soil-geomorphic contextual data, site discovery techniques, and assessments of each survey area with regard to levels of probability for encountering sites of each type (cairns, caves/rock shelters, and open-air sites) following the predictive model of site location developed by Ahler and Albertson (1996) and further refined by Ahler et al. (2000). The Research Design shall be submitted to CERL for

approval prior to commencement of fieldwork. The Research Design does not provide the Contractor with an opportunity to unilaterally modify the requirements of this SOW.

**b. Task 2.** Conduct an archaeological survey of 1600 acres of installation lands using methods specified in the Research Design and in accordance with the following requirements:

The Contractor shall provide personnel with suitable geomorphological experience in the Mid-Missouri region to assist in the research. The qualified personnel shall have a scholarly familiarity with existing geomorphological and archaeological predictive locational model reports (i.e., Ahler and McDowell 1993; Albertson et. al. 1995; Ahler and Albertson 1996; Ahler et al. 2000) available through CERL or the FLW POC. Soil descriptions shall follow standardized United States Department of Agriculture nomenclatures. In addition, soil colors shall be described using a Munsell Color Chart.

The Contractor shall search for archaeological materials using systematic walkover and subsurface testing techniques. The survey area shall be inspected by individuals walking a series of linear transects. All transects shall be spaced at intervals not exceeding twenty (20) meters in width, unless otherwise indicated in Appendix 1. Field personnel shall conduct systematic subsurface testing (e.g., posthole testing, and/or auger testing with a minimum of a twelve [12] cm diameter) wherever vegetation, leaf litter, etc. restricts surface visibility to less than 30%. In areas with a slope greater than fifteen (15) degrees, visual surface inspection is sufficient while maintaining the required twenty (20) meter interval, unless otherwise specified in Appendix 1.

If benches, caves, or rock shelters are encountered in high slope areas, these shall be posthole/shovel probed if no artifacts are observed on the surface or the talus slope. Caves and rock shelters shall not be subjected to additional subsurface testing if cultural material is present on the surface or the talus slope or after the recovery of a minimum of one (1) artifact from a shove/posthole probe.

Certain landforms such as alluvial fans, terraces and floodplains may require deeper testing and/or augering to determine the presence of cultural material. Refer to Appendix 1 for the appropriate survey techniques for each allostratigraphic unit or landform. All subsurface tests shall be excavated in levels not to exceed ten (10) centimeters (cm). All excavated soil shall be screened with 1/4 inch (0.66 mm) hardware cloth. All cultural items shall be retained for analysis. All posthole, shovel, and/or auger tests shall be backfilled upon completion of the testing.

Within the designated survey areas some land has been previously disturbed and other regions will not require survey based on slope, deposition, or soil property (e.g., wet soils or slough). These locales shall be identified in the field through visual inspection and/or posthole or auger testing. Documentation of the extent of these disturbances shall be made and incorporated into the Final Report, specifically illustrating and providing acreage estimation of areas of the survey quadrant within which the land has been previously disturbed (e.g., by erosion, military training, quarries, construction) and did not require subsurface testing. Additionally, any allostratigraphic unit associated with Roubidoux Creek or the Big Piney River with a subscript (soil property designation) of “w” for “wet soils”, “s” for “slough”, or “d” for “disturbed” will not require subsurface survey. An example of such an area is “T2s” (see Albertson et. al. (1995) for soil geomorphic map plates for Roubidoux Creek and the Big Piney River). Old topographic maps and aerial photographs available at the FLW Natural Resource Office may provide additional information on historic sites and possible disturbed areas.

If cultural material is found, posthole, shovel, and/or auger tests shall be excavated to define the site boundaries and depth of deposits. When an artifact is discovered, the transect interval shall be reduced to ten (10) meters in order to accurately identify site boundaries or determine the presence of an isolated find. Each subsurface test (positive and negative) within a site boundary shall be numbered consecutively in the field using Arabic numerals, and artifacts shall be collected and analyzed according to the subsurface test number and depth of recovery. To maintain consistency in recording, an archaeological site at FLW shall be defined as any locus where human behavior has resulted in the deposition of a minimum of three artifacts that are at least fifty (50) years old and are located within a twenty (20) meter diameter area. Less than three artifacts older than fifty (50) years within the twenty (20) meter diameter

shall be considered as an isolated find. Isolated finds shall be recorded using the same techniques as those used for sites.

Data on soil color, texture, and stratigraphy shall be recorded for a representative number of shovel and/or posthole tests at each site and isolated find. Such data shall be recorded for all deep auger tests.

**c. Task 3.** Record all historic and prehistoric archaeological sites and isolated finds and collect a sample of temporally and functionally diagnostic archaeological materials with proper provenience data.

All archaeological sites and isolated finds shall be precisely located with Universal Transverse Mercator (UTM) coordinates. The Contractor shall use a GPS-based (Global Positioning System) geographic data collection system to obtain highly accurate locational data (expressed in Zones, Eastings, and Northings). The GPS data accuracy shall be 2-5 (two to five) meters CEP (Circular Error Probable) with differential correction, or 12 (twelve) meters CEP without differential correction and SA (Selective Availability) off. The Contractor shall compare the GPS locational data for each site and isolated find with the UTM grid data obtained manually by plotting each location on USGS 1:24000 scale maps and calculating the Zone, Easting, and Northing for each by using the appropriate UTM coordinate counter.

All sites shall be recorded with a minimum of three (3) 35 mm black and white photographs and three (3) color slides. Isolated finds shall be recorded with a minimum of one (1) 35 mm black and white photograph and one (1) color slide. The photographic recording form shall include information on the site number, survey area, photograph orientation, date, film and exposure number. All diagnostic artifacts shall be documented with publication quality black and white photographs, which include a size scale, or by scaled lined drawings.

Document the present condition of the cultural resources with regard to present and potential impacts or disturbances caused by military activity, erosion, looting, etc. This information shall be included on site forms and in the Draft Report. Sites and isolated finds located during this survey shall be delineated on USGS 1:24000 scale maps and submitted as an unbound appendix to the report (Ref: Section 13f[2]). Sites shall be accurately plotted to size and shape; standardized dots or other symbols shall be used only for isolated finds and very small sites. A survey datum shall be established on each site. Professional, scaled site maps shall be made for each site and isolated find located under this task order. Minimally, each map shall show the following: site limits; important landmarks (e.g., buildings, paths, roads, utility poles); major impacts (e.g., vehicle ruts, fighting holes, erosional gulleys); the site datum; the approximate limits of wooded, open, and/or severely deflated areas; cultural features; diagnostic surface artifacts; and consecutively numbered positive and negative subsurface tests.

All sites shall be recorded on standard State of Missouri Archaeological Survey Forms. The Contractor shall obtain site numbers from the Archaeological Survey of Missouri (ASM) upon completion of the field survey. All previously recorded sites within the survey areas shall be revisited and updated forms on each site shall be included in the Draft and Final reports. The updated forms shall document any disturbance to an archaeological site to assist with the enforcement of the Archeological Resources Protection Act (ARPA). The Contractor shall prepare a table listing of the assigned site numbers and isolated find designations with their respective UTM coordinates. All site data (including completed ASM site forms and the table listing of site/isolated find numbers and their UTM coordinates) shall be forwarded to the FLW POC prior to submission of the Draft Report for inclusion in the installation's GIS database.

**d. Task 4.** Compile all field information and descriptions of artifacts and features into a comprehensive written report detailing the location and aerial extent of all archaeological sites and isolated finds. Describe in detail all recovered artifacts and, when possible, interpret diagnostic materials as to cultural and temporal affiliation and function. Analysis of cultural materials shall be compatible with artifact typologies and nomenclature for the Midwest region, and consistent with the descriptions and classifications presented in existing FLW cultural resource reports published after 1992. Provide an assessment and written discussion of the applicability and adequacy of the survey methods and

recommendations for any necessary refinements. The draft and final versions of the written report shall include, but need not be limited to, a thorough discussion of the topics specified below in Section 13e.

e. **Task 5.** Provide recommendations of National Register of Historic Places (NRHP) eligibility potential for all prehistoric and historic sites located under this survey (36 CFR Part 800). For each site, specify the criteria used to make recommendations about ineligibility for the NRHP or the need for conducting a formal assessment of NRHP eligibility. If additional testing is recommended, the Contractor shall specifically address what additional information is required for a determination of eligibility to the NRHP.

f. **Task 6.** Use the data on site location resulting from the survey conducted under this SOW to evaluate the predictive models of archaeological site location developed by Ahler and McDowell (1993) and Ahler et. al. (2000). Specifically, compare the density or frequency of sites by site type predicted by the models to occur in high, medium, and low probability zones with the occurrence of sites located in this survey. Results of this analysis shall be presented in tabular and text format. The scope of this analysis and the approach used shall be similar to that used by Adams (1997:151-152).

g. **Task 7.** Process, catalog, analyze, and prepare all artifacts for permanent curation in accordance with 36 CFR Parts 79, and Army Regulation ER 1130-2-433 (Collections Management and Curation of Archeological and Historical Data). All artifacts shall be washed, sorted by site number and raw material class, and labeled according to site and provenience. Artifacts collected for specific tests (e.g., residue analysis) may be, with the approval of the CERL COR or Technical Representative, exempt from washing. Artifacts shall be stored in acid-free primary containers, which are labeled according to site number and provenience, if applicable. Artifacts within the primary containers shall be stored in zipper-type polyethylene bags (minimally 4 mil in thickness). Each bag shall be labeled with a permanent black marker with the site number, provenience, material or artifact class, and other pertinent information. In addition, site number and provenience data shall be written with a permanent, waterproof marker on a small strip of acid-free paper or polyethylene film and included in each container. Acid-free cardboard boxes may be used to protect delicate specimens. Should protective cushioning be required, as in the case of skeletal remains, polyethylene foam is the required product. Shredded paper, cotton, or paper towels are not acceptable. Carbon samples shall be stored in the original aluminum foil packages, if possible, and placed in a polyethelyne zipper-lock bag.

All documentation relating to the collections (field notes, lab notes, analysis forms, photographs, etc.) shall accompany the collections. All paper records shall be reproduced on acid-free paper. Photographic records (slides, negatives, prints) shall be enclosed in polyethylene holders or Mylar sleeves.

**5. GOVERNMENT FURNISHED INFORMATION OR MATERIAL:** The government shall furnish the following materials, information, and support:

- a. Installation topographic maps and detailed maps showing the location of all known archaeological sites within the survey areas, if requested.
- b. The necessary permits to enter and conduct the survey at FLW, Missouri.
- c. Copies of archaeological survey reports from previous investigations at FLW, Missouri, if requested.
- d. CERL Standards for Submission of Archaeological Materials (ref: Section 4 c).
- e. A copy of *Archeological Inventory Survey Standards and Cost-Estimating Guidelines for the Department of Defense* (Zeidler 1994) prepared in cooperation with the Cultural Resources Research Center at CERL, if requested.
- f. Copies of 36 CFR Parts 79 and 800, if requested.

g. A copy of EC 1110-1-83 which contains EO 12906 and the Federal Geographic Data Committee's Content Standards for Digital Geospatial Metadata and a copy of the Corpsmet Metadata Generation Tool (ref: Section 13 f [5]).

h. The U.S. Army Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1 Revised Oct. 1987), if requested (ref: Section 12).

#### **6. CONTRACTING OFFICER'S REPRESENTATIVE (COR) and POINTS OF CONTACT**

**(POC):** The CERL COR for this project is Tad Britt, 217/352-6511. Mr. Britt may be contacted for clarification and/or direction on technical matters. The CERL Contracting Officer (CO) and Contract Specialist are identified in Block 7 of the Order for Supplies or Services (DD Form 1155), respectively, and are the only responsible parties for contractual matters. No Government personnel, other than the Contracting Officer, shall have the authority to do other than clarify technical points, or supply relevant information. Specifically, no requirements in this SOW may be altered as a sole result of such verbal clarification. No changes to the SOW are authorized unless approved in writing by the Contracting Officer.

**7. MEETINGS AND REVIEWS:** The Contractor shall meet with the CERL POCs and FLW POC on a mutually agreeable day and time at FLW, or through a telephonic conference, prior to the commencement of fieldwork. The Contractor may request additional meetings with the CERL COR, Contracting Officer, and/or the FLW POC, either in person or telephonic, at mutually agreeable dates and times.

#### **8. GENERAL PROVISIONS:**

a. The Contractor shall be responsible for conducting a field survey and producing a written report that meet the acceptance criteria of the Missouri State Historic Preservation Office (SHPO) (ref: Section 4).

b. The Contractor shall provide full cooperation with the FLW POC and other officials appointed by FLW and CERL. The Contractor shall participate in interaction concerning FLW with representatives of the Advisory Council for Historic Preservation (ACHP) or the Missouri State Historic Preservation Office (SHPO) only upon the direction of the FLW POC and CERL COR.

c. Persons working under this task order are considered to be carrying out official agency duties associated with the management of archaeological resources, and therefore are exempt from obtaining an Antiquities Permit per Section 5 of 32 CFR Part 229 - Protection of Archaeological Resources Uniform Regulations. However, the Contractor shall meet all requirements necessary to carry out archaeological investigations under ARPA. These requirements include professional qualifications, research design, research strategy, and standards of recording, reporting and curation. It shall be the responsibility of the Contractor to ensure all aspects of the field examination are conducted by or under the direct supervision of a qualified archaeologist. In addition, all historic archaeological site areas shall be examined in the field by a qualified historical archaeologist as per 36 CFR Part 61 of the National Historic Preservation Act of 1966, as amended.

d. The field investigations shall be conducted in close coordination with CERL and the Cultural Resources Manager at FLW. The Contractor shall verify with CERL that full coordination with FLW Range Control has been established prior to visiting the survey areas (ref. Section 9 below). The FLW POC will provide the Contractor with the appropriate telephone numbers and address of the Range Control Office. The Contractor shall obtain all necessary rights-of-way for access to private property, if necessary.

e. In accordance with the provisions of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), should human skeletal remains be encountered during the course of the investigations, either during fieldwork or during laboratory analysis, the Contractor shall immediately notify the FLW Cultural Resources Manager and the CERL COR. The FLW POC will issue further instructions. Fieldwork shall not continue in the immediate area of the inadvertent discovery until instructions from the FLW POC have been issued. The Contractor shall prepare and submit a letter report to CERL detailing the findings.

f. The Government and the Contractor understand and agree that the services to be rendered under this contract by the Contractor to the Government are non-personal services and the parties recognize and agree that no employer-employee relationships exist or will exist under the contract between the Government and the Contractor's employees.

g. The FLW area contains a number of threatened and endangered species of plants and animals. Archaeological survey work shall be coordinated with ongoing natural resources surveys and monitoring efforts at the installation. To facilitate this coordination, survey teams shall be required to become familiar with the visual identification of the sensitive species in question and avoid damaging them in the event that the species are located within the targeted survey areas. The FLW POC will provide assistance in this effort.

h. Official State of Missouri trinomial site identification numbers shall be used on all site forms, index forms, maps, charts, graphs, reports, and collections. It shall be the responsibility of the Contractor to obtain trinomial site numbers from the SHPO (ref: Section 4c).

i. Except with prior approval from the Contracting Officer, neither the Contractor nor any of his/her employees or consultants shall release for publication or any other use (including student thesis or professional journals) any sketch, photograph, report, or other material of any nature pertaining to any matters for which services are performed under the terms of this task order. The provisions of this paragraph shall extend also to the release of any such material to any person, including the public media and the professional community, without the expressed written approval by the Contracting Officer.

j. In the event that the Contractor encounters problems in fulfilling performance requirements, or when difficulties are anticipated in complying with the stated schedule or dates, or whenever the Contractor has knowledge that any actual or potential situation is delaying or threatening to delay timely performance of tasks, the Contractor shall immediately notify the CERL COR by telephone communication and in writing all relevant details. In addition, the Contractor shall provide a copy of any written communication relating to possible problems or delays to the CERL Contracting Officer. However, this material will be informational in character and this provision shall not be construed as a waiver by the U.S. Government of any delivery schedule or date, rights, or remedies provided by law or under this SOW. The Schedule of Deliverables in this SOW is developed in consideration of potential inclement weather and other environmental constraints, and contract modifications extending delivery dates will not be granted on the basis of such delays.

k. The Contractor shall provide the CERL COR with copies of field records, maps, or other work in progress prior to submission of the Draft and Final Reports if such materials are required for preparation of CERL in-house reports, planning documents, or presentations.

**9. ACCESS RESTRICTIONS:** Military training activities, including weapons firing, occur on a daily basis throughout FLW. Access to all training areas within the installation is restricted. Proper coordination procedures are required to enter any area not denoted as being open for public access. The Contractor must abide by any Range Control Office access requirements.

Access into or through areas denoted as "range fans" or "impact areas" will be permitted only with proper coordination and clearance with the Range Control Office. During live-fire activities on ranges associated with a range fan or impact area, access into such areas will not be allowed.

Should situations develop in which military training affects access to survey areas, the Contractor shall be prepared to move temporarily to other previously selected survey areas or adjust the timing of the scheduled fieldwork accordingly. Unexpected changes in training or Range Control requirements may at any time reduce, increase, or otherwise change stated access coordination procedures.

**11. INSPECTION OF WORK IN PROGRESS:** All phases of work in progress are subject to periodic inspections by CERL personnel and FLW representatives without prior notice to insure that the work is performed in compliance with the terms of this SOW. If the work is not in accordance with the specifications stated herein, time spent making corrections will be absorbed by the Contractor with no additional expense to the U.S. Government. All work-related records shall be available at all times for examination by the CERL COR.

**11. TRAVEL:** Travel anticipated under this SOW shall consist of travel to and from the FLW area. All travel costs shall be the sole responsibility of the Contractor.

**12. SAFETY:** The Contractor shall at all times conduct operations in a safe manner and in accordance with the U.S. Army Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1 Revised Oct. 1987).

The Contractor (including all persons who will at any time enter the installation for the purpose fulfilling the obligations of this task order) may attend an EOD (Explosive Ordnance Detachment) safety briefing, if requested by the Contractor. Although the survey areas are not known to contain any explosive objects, this briefing includes instruction in identification of such objects and the proper procedures to follow should such objects be found. The Contractor shall contact Dr. Richard Edging, Cultural Resource Manager (573/596-0871), to request scheduling the safety briefing. The date and time of the briefing will be determined by the EOD and may require up to two weeks advance notice to schedule. The Contractor shall be responsible for all required persons being present at the assigned location for this briefing.

**13. REPORTS/DELIVERABLES:** The Contractor shall submit the following reports/deliverables to the CERL COR or Technical Representative listed in Section 6 above:

a. Monthly Report. Two (2) copies of a progress report every month for the duration of the contract. These reports are due by the 10th day of each month and shall document the progress of the work and any actual or anticipated problems or delays.

b. Research Design. Five (5) copies of the research design (Section 4, Task 1) shall be delivered within thirty (30) calendar days after the award of the contract. CERL and FLW will review the Research Design and provide comments, recommendations, or required changes, if any, within thirty (30) calendar days after receipt. Fieldwork shall not begin until the Contractor is notified (by telephone and/or in writing) by CERL of the acceptance of the Research Design. If changes are required, the Contractor shall submit a final version of the Research Design within thirty (30) days after receipt of these required changes. This final Research Design report shall be submitted prior to initiation of fieldwork.

c. Manager's Report. Five (5) copies of a Manager's Report on the archaeological survey shall be submitted within thirty (30) calendar days after completion of fieldwork. The Manager's Report shall contain a brief discussion of the preliminary project results and an outline of the content and format of the Final Report. CERL and FLW will review the outline and provide comments, if any, within thirty (30) calendar days after receipt.

d. State of Missouri Archaeological Survey Forms. Two (2) copies of a State of Missouri Archaeological Survey Form for each site and isolated find identified during the fieldwork for this project



(including the official, assigned archaeological site number) shall be submitted to the CERL COR or Technical Representative within three (3) months after completion of fieldwork. A table listing of the assigned site numbers/isolated find designations with their respective UTM coordinates shall be submitted with the completed site forms.

e. Draft Report. Five (5) copies of the Draft Report that incorporates the Manager's Report review comments, if any, shall be submitted within twelve (12) months after award of this task order. The report shall be professional in appearance, style, and content, and shall follow as closely as possible the format for reports in the *American Antiquity* style guide. If the Contractor prefers to use an alternative style, he/she shall submit an example of that style along with the Manager's Report. The Contractor shall not use an alternative style unless permission to do so is granted in writing by the CERL COR or Technical Representative. CERL and FLW will review and provide comments, if any, within forty-five (45) calendar days after receipt. All substantive comments on, or required changes to, the Draft Report provided by FLW and CERL shall be incorporated into the Final Report. The Contractor shall provide CERL with a written explanation as to why specific comments or required changes should not be incorporated into the Final Report thirty (30) days prior to submitting the Final Report. CERL and FLW will have one (1) week to approve or reject the Contractor's request. The report shall include, but not be limited to, the following sections:

(1) Title Page. Indicates the project name, type of study, location (project name and counties), report date, name of Contractor, Principal Investigator(s), and Corps of Engineers contract and delivery order number. CERL reserves the right to provide the Contractor with the format for the cover of the Final Report.

(2) Management Summary/Abstract. A brief synopsis of the work conducted, number and types of cultural resources identified and overall significance, and an overview of the management recommendations.

(3) Foreword. CERL reserves the right to provide a foreword to the project, which the Contractor shall include in the Final Report. CERL will provide the Contractor with a copy of this foreword no-later-than the date of submission of comments on the Draft Report.

(4) Undertaking Information/Introduction. Identify the sponsor and Contractor, the purpose for the investigation, discuss the type of investigation performed and location, indicate the disposition of the artifacts, and original records or other data. Discuss the report organization.

(5) Research Design. Identify research questions pertaining to culture history, settlement and subsistence patterns, etc., to which data generated by the survey may be relevant. Address problems and testable hypotheses.

(6) Natural Environment of the Study Area. A detailed description of the survey area including physical features and topography, soils, past and present vegetation and fauna, past and present land uses. (Rely primarily on overviews presented in previous studies of the FLW area after 1992.)

(7) Cultural Overview and Previous Work. A general outline of prehistoric and historic cultural development in the southern Midwest area and Ozark region (rely primarily on overviews

presented in previous studies of the FLW area after 1992) and an enumeration and description of all previous cultural resources investigations conducted within the project area, names of principal investigators, dates of the studies, study results, and an overview of the general adequacy and deficiencies of the past work.

(8) Field and Laboratory Methods. Present the field procedures used to accomplish the research design. Discuss how the fieldwork was organized, scheduled, and carried out. Detail the laboratory procedures and the methods used to analyze artifacts and other data recovered from the field. Provide operational definitions for all analytical categories and descriptive terms (such as cultural midden and feature). Provide references to all artifact types and taxonomic units.

(9) Results of Fieldwork. Describe in detail all cultural resources or potential cultural resources identified by the field investigation and/or the literature search. The information provided in this section for cultural resources located during the course of the field investigation shall include, but not be limited to: site name (if any); site number; county; state; site type (lithic scatter, farmstead, etc.); component(s) or probable component(s), including temporal/cultural affiliation; elevation; description of the topographic position; site size or presumed site size; stratigraphy and depth (if known); present vegetation and surface visibility at time of field investigation (in percent); nearest water source (name, distance, elevation); condition (address current, projected, or past impacts); if collections were made, by whom and when; a description of artifacts collected and the sampling strategy used; a description of all recovered artifacts and, when possible, an interpretation of all diagnostic materials as to cultural and temporal affiliation and function; a description of any previous investigations at the site; and site specific recommendations and remarks. The site specific recommendations shall include, but not be limited to, any recommendations for testing for National Register eligibility, if needed, by assessing site integrity and research potential. The recommendations section shall also include any interim measures, which shall be taken to preserve any NRHP eligible or potentially eligible site. Include tables and figures as needed. Do not include in the report detailed locational information (e.g., UTM coordinates) that would allow the site to be located by unauthorized individuals. Exact locational information shall be included in one or more appendices that are not bound with the main body of the report.

(10) Research Summary. Use data generated by the survey to address research questions specified in the Research Design.

(11) Bias Assessment and Level of Effort. Provide detailed and accurate data pertaining to the level of effort (in number of person hours) expended on all major activities for the duration of this contract during each stage of the project including, but not limited to, the following: background research; research design and report preparation; number of person hours expended on the excavation of posthole/auger tests and walk-over survey per acre surveyed (specifying each alloformation), site mapping, artifact processing, and artifact analysis and report preparation. These data shall be based on records maintained throughout the duration of the project, and shall be submitted along with other project documentation. Rough estimates completed at the end of the project will not be accepted. Other pertinent logistical data to be discussed in the Final Report include effects of surface visibility, weather conditions, and other factors on the rate and/or quality of work.

(12) Study Area Recommendations. Synopses of the recommendations offered for individual resources with the study area.

(13) References. Use the *American Antiquity* format for every publication, work, or interview cited in the report.

(14) Appendices. Final State of Missouri archaeological inventory forms, field notes, maps, photographs, and a list of all artifacts collected. All locational data shall be restricted to state site forms and the table listing of the assigned site numbers/isolated find designations with their respective UTM coordinates, and shall be bound separately. Two (2) copies of each site form and the site number/UTM coordinate table shall be delivered to at the time of final report submission.

f. Final Report. Forty (40) copies of a final report and a camera ready copy shall be submitted, incorporating CERL and FLW comments on the draft report, if any, within forty-five (45) calendar days after receipt of comments. All copies of the Final Report shall have laminated covers. Additionally, two electronic word processing files in Microsoft Word 6.0 or a compatible format of the Final Report shall be submitted. The reports shall be delivered to the CERL COR or Technical Representative. The Final Report and all associated documents shall become the property of the U.S. Government and shall not be published or reproduced without written permission. The following shall be submitted at the time of final report submission.

(1) Two sets of updated Archaeological Survey of Missouri site forms.

(2) USGS 1:24000 scale maps with exact locations of all cultural resources (archaeological sites and isolated finds) and survey areas.

(3) Artifacts. All artifacts shall be carefully washed, labeled, cataloged, recorded, and stored according to federal regulations established by the Advisory Council on Historic Preservation (36 CFR Parts 79) and as specified under Section 4 c of this SOW. All artifacts recovered during the course of the field survey are the property of the U.S. Government and shall be delivered to CERL at the time of submission of the Final Report. Collections shall be stored in archival stable primary and secondary containers marked "Property of the U.S. Government FLW, Missouri".

(4) All field notes, photographs photographic logs, negatives, maps and drawings shall be indexed, reproduced on acid-free paper, bound in archival stable binders, appropriately labeled, and submitted to CERL with the associated collections.

(5) The Contractor shall provide metadata files for all geospatial data produced. Geospatial data are defined as information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the earth. Geospatial data affected by these requirements are those generated in: Geographic Information Systems (GIS); Land Information Systems (LIS); Remote Sensing or Image Processing Systems; Computer-Aided Design and Drafting (CADD) systems; Automated Mapping/Facilities Management (AM/FM) systems; and other computer systems that employ or reference data using either absolute, relative, or assumed coordinates such as hydrographic surveying systems. The metadata file shall be in accordance with the terms of the basic indefinite delivery indefinite quantity contract terms. Reference pages C-7 and C-8 of the indefinite delivery indefinite quantity contract.

#### **14. SCHEDULE OF DELIVERABLES:**

Deliverables shall be submitted to the CERL COR or Technical Representative, as follows:

- |    |   |  |
|----|---|--|
| a. | Monthly Progress Report:                            | By the 10th day of each month.                                 |
| b. | Research Design:                                    | Within thirty (30) calendar days after award                   |
| c. | Fieldwork:  | Completed within nine (9) months after award                   |
| d. | Manager's Report:                                   | Within thirty (30) calendar days after completion of fieldwork |
| e. | State of Missouri<br>Archaeological Survey<br>Forms | Within three (3) months after completion of fieldwork          |
| f. | Summary Reports:                                    |  |
|    | Draft:  | Within twelve (12) months after award                          |
|    | Final:  | Within fifteen (15) months after award                         |
| g. | Artifacts and Associated<br>Documentation:          | Within fifteen (15) months after award                         |

#### **15. PERIOD OF SERVICE:**

All work under this task order shall be completed within fifteen (15) months following award of the task order.

## Appendix 1

### Prehistoric Archaeological Site Potential of Alloformations at Fort Leonard Wood

Formation	Depth and Relative Site Potential		Required Survey Technique
	0-50cm	Buried (>50 cm)	
T0-Cookville	None	N/A	Not necessary for management purposes.
T1-Happy Hollow	None	None	Not necessary for management purposes.
T2-Ramsey	Very Low	Very Low	Examine bankline exposures for material in buried A horizon (under approx. 2 m of historic overburden).
T3-Dundas	Low	Low	Examine bankline exposures; screen posthole tests to 0.5m depth at 40 m grid interval and test to 1.5m depth in 10% of total acreage; where positive, excavate posthole tests to 1.0m depth minimum.
T4-Quesenberry	High	Moderate	Examine bankline exposures; screen posthole tests to 0.5m depth at 20 m grid interval and test to 1.5m depth in 10% of total acreage; where positive, excavate posthole tests to 1.0m depth minimum.
T5-Miller	High	High	Examine bankline exposures; screen posthole tests to 1.0m depth at 20 m grid interval and test to 2.0 m depth in 10% of total acreage and within site areas.
T5o-Miller organic	High	High / Moderate	Examine bankline exposures; screen posthole tests to 1.0m depth at 20 m grid interval and test to 2.0m depth in 10% of total acreage

and within site areas.

T6-Ousley Spring	Very Low	Very Low	Screen posthole tests to 0.5m depth (or water table, if reached first) at 40m grid interval.
T7-Stone Mill	Moderate	Very Low	Screen posthole tests to 0.5m depth at 20 m grid interval.
T7co-Laughlin	Moderate	Very Low	Screen posthole tests to 0.5m depth at 20 m grid interval.
AF-McCann	Moderate	Moderate	Screen posthole tests to 0.5m depth at 20 m grid interval.
TR1-Baldrige	Low	Low	Not necessary for management purposes.
TR2-Hanna	Unknown	Unknown	Examine bankline exposures; Screen posthole tests to 1.0m depth in 10% of total acreage.
B-Borrow areas	None	None	Not necessary for management purposes.
C-Construction	None	None	Surface survey to determine existence and condition of sites; if sites are present, determine if context is intact and document using screened posthole or auger tests.

Note: Any allostratigraphic unit/formation above with a subscript of “w” (wet soils), “s” (slough), or “d” (disturbed) will not require systematic subsurface testing. See Albertson (1995) for the soil-geomorphic map of FLW.

## **7.1.2 STATEMENT OF WORK: National Register Eligibility Assessments at Three Prehistoric Archaeological Sites, Fort Leonard Wood (FLW), Pulaski County, Missouri** (This project was completed in FY2000, see Kreisa 2000).

**1. INTRODUCTION:** Fort Leonard Wood (FLW), a U.S. Army installation in south-central Missouri, has requested the assistance of the Cultural Resources Research Center of the U.S. Army Construction Engineering Research Laboratories (CERL) in conducting National Register of Historic Places (NRHP) eligibility assessments at three (3) prehistoric archaeological sites.

The project described in the Statement of Work (SOW) is part of an ongoing CERL research effort to obtain metadata on time/motion expenditures and site recovery data, which will be used to develop accurate, cost estimation guidelines for archaeological investigations.

Federal law requires that military land managers take into account the effect of their undertakings on historic properties (including archaeological sites) that are listed on or eligible for inclusion in the National Register of Historic Places. Cultural resource management compliance processes have been codified under such laws as the National Historic Preservation Act of 1966 (NHPA), as amended, and Army Regulation (AR) 200-4. Additional Federal laws and Army regulations require compliance with Sections 106 and 110 of the NHPA and the Archeological Resources Protection Act (ARPA). More recent legislation expands the compliance and stewardship roles of the Army in regard to historic preservation. These include the National Environmental Policy Act (PL 91-190), Native American Graves Protection and Repatriation Act (NAGPRA), and the American Indian Religious Freedom Act (AIRFA).

**2. OBJECTIVES:** The objectives of the work to be performed under this task order are to assess, and provide a written report on, the National Register eligibility of three (3) prehistoric archaeological sites at FLW, Missouri. The selected sites include two (2) open air sites and one (1) rockshelter site. A list of the selected sites is attached to this SOW as Appendix A. In addition, this task order will include incorporating into the final report summary information pertaining to a small amount of analyzed artifactual material that may be recovered through an independent effort of excavating a 2.0 meter long, 20 cm wide, 50 cm deep trench in order to construct a gate restricting access to a cave site (23PU744) associated with the three sites listed in Appendix A. The excavation of the trench, analysis, quantification, and curation of the artifactual material, and construction of the gate will be completed by CERL and FLW personnel and is not the responsibility of the Contractor.

**3. MAJOR REQUIREMENTS:** In order for the Contractor to accomplish the objectives of this task order, it shall be necessary for the Contractor to complete the following tasks:

**a. Task 1.** Prepare a comprehensive Research Design incorporating extant data relevant to the archaeological sites to be tested. For each site, identify the research issues of local, regional, and/or national relevance to which the site may contribute important information. At a minimum, the Research Design shall specify the research questions to be addressed by the testing, and the field and laboratory methods to be used, following the requirements of this Statement of Work. The Research Design does not provide the Contractor with an opportunity to unilaterally modify the requirements of this SOW.

**b. Task 2.** Testing of three (3) prehistoric sites. Investigation of the three (3) sites shall include the following subtasks:

(1) A permanent datum(s) shall be established at each site. Each datum shall consist of a section of metal pipe labeled with the site number, Universal Transverse Mercator Grid (UTM) coordinates, elevation above mean sea level, and the site metric grid coordinates. Each datum shall be covered with five (5) cm of topsoil upon completion of the investigations.

(2) Site Grids: A metric grid system shall be established at each of the three (3) sites.

(3) Mapping: Professional quality, metric site maps shall be made for each site. All site maps shall be scaled drawings utilizing land surveying techniques. All shovel, posthole, and auger tests, test units, trenches, cultural features, areas of disturbance (by roads, vehicle tracks, foxholes, looter holes, bivouac activities, etc.), and elevation contours shall be incorporated into the appropriate site map. Standardized map legends shall be used for each site map.

(4) Test Units, Trenches, and Posthole/Shovel Tests: The Contractor shall choose excavation locations as he/she deems appropriate in accordance with the SOW objectives and the minimum excavation requirements as stated herein. Each test unit or trench shall be the equivalent of at least one (1) square meter. Trenches shall be excavated in situations where it is desirable to bisect a large feature or where the placement of a standard 1m x 1m unit is not feasible, such as in a rockshelter. Trenches may be longer and more narrow than standard test units, but shall otherwise be excavated using the same techniques.

A minimum of three (3) square meters of test units or trenches shall be excavated at 23PU731, small open air site.

A minimum of two (2) square meters of test units or trenches shall be exposed at 23PU739, the rockshelter site.

A minimum of four (4) square meters of test units or trenches shall be exposed at 23PU745, large open air site.

Each category of excavation unit (test units, trenches, posthole/shovel tests, features, etc.) shall be numbered consecutively at each site with Arabic numerals, beginning with 1. Test units, trenches, and posthole/shovel tests shall be excavated to culturally sterile soil using a combination of natural and arbitrary levels. Natural levels shall, if necessary, be subdivided such that no sub-plowzone level exceeds ten (10) cm in thickness. All excavated soil shall be screened through a maximum 6.35 mm (0.25 inch) hardware cloth. All cultural materials recovered shall be collected with proper provenience data, analyzed, and prepared for curation. For each test unit, soil descriptions following standardized United States Department of Agriculture nomenclatures shall be recorded. In addition, soil colors shall be described using a Munsell Color Chart.

While mechanized (e.g., backhoe) excavation is acceptable under certain circumstances, it shall be implemented only with the prior approval of the FLW POC and the CERL Contracting Officer's Technical Representative and shall not replace or lessen the required amount of hand excavation.



(5) Cultural Features: All features (hearth, pit, etc.) shall first be mapped and photographed in plan. One half of the feature shall then be excavated, and the resulting profile documented using scaled maps, black and white print and color slide photographs. The remainder of the feature shall then be excavated. If a feature extends beyond the boundaries of a test unit, the Contractor is not obligated to expand the test unit. If the feature contains *in situ* oxidized deposits, has distinct hearth features, and has a potential for archeomagnetic dating, it shall be mapped in its entirety, thoroughly documented, photographed, and backfilled with care taken not to disturb its integrity. The Contractor shall notify CERL or the FLW POC of the intent to follow this action.

(6) Special Samples: Special samples shall be collected, processed, and analyzed as specified below:

Radiocarbon samples shall be collected whenever appropriate material is available. A minimum of two samples from each site (if available) shall be submitted for chronometric analysis.

Full soil characterization analyses shall be performed on a minimum of six (6) paired soil/sediment samples from anomalies at sites in which the analyses are deemed most appropriate (for a minimum total of twelve [12] samples). For each pair, one half of the paired sample shall be taken from the anomaly and the other half shall be taken from an area outside of the anomaly for contrast. These full soil characterization data shall be used to assist in determining the presence and/or nature of geophysical anomalies that may not be discernable by visual inspection.

Flotation samples from all cultural features and each cultural level in each test unit shall be collected, processed, and analyzed.

(7) Posthole, Shovel, and Auger Tests: In addition to excavation of test units, the Contractor shall use some or all of these techniques at 23PU745 and 23PU731. The rockshelter site (23PU739) is exempt from this requirement since the total area of the site is not large enough to accommodate additional subsurface tests. Subsurface tests at either ten (10) or twenty (20) meter intervals have been conducted within the known site boundaries of both 23PU745 and 23PU731. The Contractor shall therefore conduct the posthole/shovel/auger tests in order to acquire more refined data on site boundaries, stratigraphy, soil characteristics, and artifact densities across each site. This may entail excavation of such tests at five (5) or ten (10) meter intervals near the periphery of the known site boundaries or within the known boundaries in order to more clearly define site limits, artifact densities, and spatial distribution. All tests shall be excavated to culturally sterile soil in ten (10) cm levels. All excavated soil shall be screened through a maximum 6.35 mm (0.25 inch) hardware cloth and all cultural materials recovered shall be collected with proper provenience data, analyzed, and prepared for curation. For each test, soil descriptions following standardized United States Department of Agriculture nomenclatures shall be recorded and soil colors shall be described using a Munsell Color Chart. At each open air site, at least two (2) of these shovel, posthole, or auger tests shall be excavated to a relatively greater depth in order to test for deeply buried cultural strata. These deep tests can be placed in the bottom of test units or trenches in order to achieve maximum depth.

(8) A minimum of five (5) black and white field photographs and duplicate color slides of each site shall be taken to record the general topography and vegetation cover prior to and during testing. A

minimum of two (2) black and white field photographs and duplicate slides shall be taken for each stage of test unit or trench excavation (prior to excavation, for each unit level excavated and/or each feature level excavated, disturbances, end of excavation, and a profile documenting soil stratigraphy). Photographs and slides shall be well-focused with appropriate exposures and suitable for inclusion in professional reports and presentations. The photographic recording system shall include information on site number, provenience, photograph orientation, date, film and exposure number.

(9) Information concerning all excavation units (e.g., test units, posthole/shovel tests, etc.) shall be recorded on standardized forms, which shall be approved by the CERL POC prior to their use. Logs noting the provenience, contents, and number of artifact bags and other special samples shall be maintained. In addition, the Principal Investigator shall keep a daily field log containing information on excavators present, work initiated, work completed, and problems encountered.

(10) All excavation units and tests shall be filled upon completion of each site testing.

**c. Task 3.** All artifacts shall be processed, cataloged, analyzed, and prepared for permanent curation in accordance with 36 CFR Parts 79 and 800, and Army Regulation ER 1130-2-433 (Collections Management and Curation of Archeological and Historical Data). The CERL Standards for Submission of Archeological Materials summarize the curation requirements. A copy of the CERL Standards for Submission of Archaeological Materials accompanies this document as Appendix B.

Analysis of cultural materials shall be compatible with artifact typologies and nomenclature for the Midwest region, and consistent with the descriptions and classifications presented in existing FLW cultural resource reports published after 1992.

All documentation relating to the collections (field notes, lab notes, analysis forms, photographs, etc.) shall accompany the collections and be submitted according to the CERL Standards for Submission of Archaeological Materials.

**d. Task 4.** Produce a comprehensive written report on the testing project. This report shall include but not be limited to discussions of the prehistory, past and present natural environment of the project area, research design, field and laboratory methods, results of fieldwork, lab and specialized analyses, interpretation of results, recommendations for resource management, and directions for future research. This report shall provide sufficient data for an evaluation of each site's eligibility in terms of the National Register of Historic Places (NRHP) criteria for eligibility, and to what degree the site is damaged or threatened in regard to its need for enforcement actions under the Archeological Resources Protection Act (ARPA). If a site appears to meet the NRHP eligibility criteria, the Contractor shall complete a NRHP nomination form and submit an unbound copy to CERL for review along with the Draft Report. A final copy of the nomination form(s) and the Final Report, incorporating all Government comments, if any, shall be submitted to CERL according to the stated schedule of deliverables (ref: section 13).

**4. GOVERNMENT FURNISHED INFORMATION OR MATERIAL:** The government will furnish the following materials, information, and support:

a. Installation topographic maps and detailed maps showing the location of all archaeological sites to be tested, if requested.

b. The necessary permits to enter and conduct the site evaluations at FLW, Missouri.

- c. Copies of archaeological survey and testing reports from investigations at FLW after 1992, if requested.
- d. Copies of archaeological survey of Missouri site forms for the archaeological sites requiring evaluation, if requested.
- e. Summary information (quantity, artifact class, artifact type, weight) on all artifacts recovered and photographs and/or scaled drawings of any diagnostic artifacts recovered during the CERL/FLW excavation of the trench necessary to construct the gate to the cave site, 23PU744.
- f. A copy of EC 1110-1-83 which contains EO 12906 and the Federal Geographic Data Committee's Content Standards for Digital Geospatial Metadata and a copy of the Corpsmet Metadata Generation Tool (ref: Section 12h).
- g. A copy of the U.S. Army Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1 Revised Oct. 1987), if requested (ref: Section 11).

#### **5. CONTRACTING OFFICER'S REPRESENTATIVE (COR) AND POINTS OF CONTACT**

**(POC):** The CERL COR for this project is Dr. Michael Hargrave, 217/352-6511 x7325. The CERL Contracting Officer (CO) and Contract Specialist are identified in Block 7 of the Order for Supplies or Services (DD Form 1155), respectively, and are the only responsible parties for contractual matters. No Government personnel, other than the Contracting Officer, shall have the authority to do other than clarify technical points, or supply relevant information. Specifically, no requirements in this Statement of Work may be altered as a sole result of such verbal clarifications. Any changes to the SOW are not authorized unless approved in writing by the Contracting Officer.

**6. MEETINGS AND REVIEWS:** The Contractor may request meetings at any time with the CERL Technical Representative, Contracting Officer's Technical Representative, and/or the FLW POC, Dr. Richard Edging, Cultural Resource Manager, 314/596-0871. Meetings may be held at CERL, FLW or telephonically at mutually agreeable dates and times.

#### **7. GENERAL PROVISIONS:**

- a. The Contractor shall be responsible for producing a written report that meets the acceptance criteria of the Missouri State Historic Preservation Office (SHPO) (ref: Section 4d).
- b. The Contractor shall provide full cooperation with the FLW POC and other officials appointed by FLW and CERL. The Contractor shall participate in interaction concerning FLW with representatives of the Advisory Council for Historic Preservation (ACHP) or the Missouri SHPO only upon the direction of authorized representatives of CERL and the FLW POC.
- c. Persons working under this Statement of Work are considered to be carrying out official agency duties associated with the management of archaeological resources, and therefore are exempt from obtaining an Antiquities Permit per Section 5 of 32 CFR Part 229 - Protection of Archeological Resources Uniform Regulations. However, the Contractor shall meet all requirements necessary to carry out archaeological investigations under ARPA and guidelines of the Missouri SHPO. These requirements

include: professional qualifications, research design, research strategy, and standards in recording, reporting, and curation.

d. The CERL COR and the FLW POC will review the Contractor's work by the quality of the delivered products and the success of this program. The draft and final deliverables serve as partial evidence of performance and are the items that will represent the work to the professional community at large.

e. The field investigations shall be conducted in close coordination with CERL and the Cultural Resources Manager at FLW. The Contractor shall verify with CERL that full coordination with FLW Range Control has been established prior to visiting the archaeological sites. The FLW POC will provide the Contractor with the appropriate telephone numbers and address of the Range Control office. The Contractor is responsible for obtaining rights-of-way for access to private property, if necessary.

f. In accordance with the provisions of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), should human skeletal remains be encountered during the course of the investigations, either during fieldwork or during laboratory analysis, the Contractor shall cease all work at the archaeological site(s) and immediately notify the FLW Cultural Resources Manager and CERL representatives who will issue instructions. The Contractor shall prepare and submit a letter report on the findings.

g. Although the project areas will not be located in active firing ranges at FLW, the potential exists for live small caliber ammunition throughout the area. The Contractor should be aware of this and exercise reasonable caution during the field investigations. If the Contractor desires, demolition training is available through FLW.

h. FLW contains a number of threatened and endangered species of plants and animals. Archaeological investigations shall be coordinated with ongoing natural resources surveys and monitoring efforts at the installation. To facilitate this coordination, the Contractor shall be required to become familiar with the visual identification of the sensitive species in question and avoid damaging or disturbing them in the event that the species are located in the testing areas. The FLW POC shall provide assistance in this effort.

i. Official State of Missouri trinomial site identification numbers shall be used on all site forms, index forms, maps, charts, graphs, reports, and collections.

j. Neither the Contractor nor their representative shall release or publish any sketch, photograph, report, or other material of any nature derived or prepared under this statement of work without written permission of the CERL COR or Technical Representative except as is specifically provided for in this statement of work. Copyright shall not be claimed by the Contractor for any materials produced under this statement of work. All materials are to remain in the public domain. The Contractor and those in his/her employ may, during the term of this agreement, present reports of research from this project to various professional societies and publications. Abstracts and copies of these reports, presentations, or articles utilizing work sponsored by CERL shall be provided to the CERL Technical Representative for approval prior to publication or presentation.

k. In the event that the Contractor encounters problems in fulfilling performance requirements, or when difficulties are anticipated in complying with the schedule or dates, or whenever the Contractor has knowledge that any actual or potential situation is delaying or threatening to delay timely performance of tasks, the Contractor shall immediately notify the CERL COR or Technical Representative by telephone communication and in writing of all relevant details. In addition, the Contractor shall provide a copy of any written communication relating to possible problems or delays to the CERL Contracting Officer.

However, this material will be informational in character and this provision shall not be construed as a waiver by the U.S. Government of any delivery schedule or date, rights, or remedies provided by law or under this Statement of Work. The Schedule of Deliverables in this SOW is developed in consideration of potential inclement weather and other environmental constraints, and no contract modifications extending delivery dates will be granted on the basis of such delays.

1. The Government and the Contractor understand and agree that the services to be rendered under this task order by the Contractor to the Government are non-personal services and the parties recognize and agree that no employer-employee or master-servant relationships exist or will exist under the contract between the Government and the Contractor's employees.

**8. INSPECTION OF WORK IN PROGRESS:** All phases of work in progress are subject to periodic inspections by CERL personnel and FLW representatives without prior notice to insure that the work is performed in compliance with the terms of this statement of work. If the work is not in accordance with the specifications stated herein, time spent making corrections or redoing the work will be absorbed by the Contractor with no additional expense to the U.S. Government. All work-related records shall be available at all times for examination by the CERL COR and Technical Representative.

**9. TRAVEL:** Travel anticipated under this statement of work shall consist of travel to and from the FLW area. All travel costs shall be the sole responsibility of the Contractor.

**10. SAFETY:** The Contractor shall at all times conduct operations in a safe manner and in accordance with the U.S. Army Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1 Revised Oct. 1987).

**11. REPORTS/DELIVERABLES:** The Contractor shall submit copies, as specified below, of the following reports to the CERL COR listed in Section 6 above:

a. Monthly Report. Two (2) copies of a progress report every month for the duration of the project. These reports are due by the 10th day of each month and shall document the progress of the work and any actual or anticipated problems or delays.

b. Research Design. Five (5) copies of the Research Design for the archaeological testing (ref: Section 4a) shall be delivered within thirty (30) calendar days after the award of the task order. CERL and FLW will review the Research Design and provide comments, recommendations, or required changes, if any, within fifteen (15) calendar days after receipt. Fieldwork shall not begin until the Contractor is notified (by telephone and/or in writing) by CERL of the acceptance of the Research Design.

c. Manager's Report. Three (3) copies of a Manager's Report on the testing project (ref: Section 4b) shall be submitted within thirty (30) calendar days after completion of fieldwork. The report shall contain a brief discussion of the preliminary project results, a discussion of anticipated management recommendations, assessment of National Register eligibility, and an outline of the content and format of the final report. CERL and FLW will provide comments, if any, within thirty (30) calendar days after receipt.

d. Draft Report. Five (5) copies of the Draft Report that incorporates all Government comments on the Manager's Report shall be submitted within twelve (12) months after award of the task order. The report shall be professional both in appearance and style, and shall follow as closely as possible the format for reports in the *American Antiquity* style guide. If the Contractor prefers to use an alternative style, he/she shall submit an example of that style along with the Manager's Report. The Contractor shall not use an alternative style unless permission to do so is granted in writing by the CERL COR or Technical Representative. CERL and FLW will review and provide comments, if any, within forty-five (45) calendar days after receipt. All substantive comments on, or required changes to, the Draft Report provided by FLW and CERL shall be incorporated into the Final Report. The Contractor shall provide CERL with a written explanation as to why specific substantive comments or required changes should not be incorporated into the Final Report thirty (30) days prior to submitting the Final Report. CERL and FLW will have one (1) week to approve or reject the Contractor's request. The report shall include, but not be limited to, the following sections:

(1) Title Page. Indicates the project name, type of study, location (state and county), report date, name of Contractor, Principal Investigator(s), and Corps of Engineers contract number. CERL reserves the right to provide the Contractor with the format for the cover of the Final Report.

(2) Management Summary/Abstract. A brief synopsis of the work conducted, types of cultural resources identified and overall significance, and an overview of the management recommendations.

(3) Foreword: CERL reserves the right to provide a foreword to the project, which the Contractor shall include in the Final Report.

(4) Undertaking Information/Introduction. Identify the sponsor and Contractor, the purpose for the investigation, discuss the type of investigation performed and location, indicate the disposition of the artifacts, and original records or other data. Discuss the report organization.

(5) Regional Location and Environment. A detailed description of the study area including physiography, geology, and soils, past and present vegetation and fauna, and past and present land uses.

(6) Cultural Overview and Previous Work. A general outline of prehistoric and historic cultural development in the southern Midwest area and Ozark region and an enumeration and description of previous cultural resources investigations conducted within the project area. These sections may rely heavily upon previous studies.

(7) Research Design. Discuss in detail research questions to which data from the tested sites are relevant.

(8) Methods. Discuss in detail the methods used in the field and laboratory. Discuss how the fieldwork was organized, scheduled, and carried out. Detail the laboratory procedures and the methods used to analyze artifacts and other data recovered from the field. Include operational definitions of analytical categories (e.g., lithic tool types, etc.).

(9) Results of Investigations. Provide a thorough summary of the results of the field investigations for 23PU731, 23PU739, and 23PU745. The information provided in this section shall include, but not be limited to: site name (if any); site number; site limits; stratigraphy and soils; tables presenting general artifact distributions, density (count and weight per liter), and weight; nature and integrity of cultural deposits and features; previous impacts to the site and present quality of preservation; artifact analyses (descriptions and interpretations of lithic, faunal, ceramic, botanical and historic remains); component(s) or probable component(s); any previous investigations at the site; and site specific remarks. Provide full information on the results of radiocarbon assays, including corrected dates.

(10) Include summary information (quantity, artifact class, artifact type, weight) on all artifacts recovered during the CERL/FLW excavation of the trench necessary to construct the gate to the cave site, 23PU744. The Contractor need not provide an interpretation of the material or an assessment of eligibility for 23PU744. Additionally, this section shall include photographs and/or scaled drawings, provided by CERL or FLW, of any diagnostic artifacts recovered during the excavation of the trench and construction of the gate.

(11) Research Results and Interpretations. Relate the results of investigations at 23PU731, 23PU739, and 23PU745 to broader research questions identified in the Research Design. Demonstrate how data from the tested sites are significant.

(12) Management Recommendations. State and explain recommendations for the management of 23PU731, 23PU739, and 23PU745, and discuss the need, if any, for further investigations.

(13) Bias Assessment and Level of Effort. Provide detailed and accurate data pertaining to the level of effort (in number of person hours) expended on all major activities for the duration of this contract during each stage of the project including, but not limited to, the following: background research, research design and report preparation; and for each site, number of person hours expended on site mapping, excavation of posthole tests, shovel tests, auger tests, excavation of each test unit and/or trench, artifact processing, and artifact analysis. These data shall be based on records maintained throughout the duration of the project, and shall be submitted along with other project documentation. Rough estimates completed at the end of the project will not be accepted. Other pertinent logistical data to be discussed in the Final Report on a per-site basis include effects of surface visibility, weather conditions, and other factors on the rate and/or quality of work.

(14) References. Use the *American Antiquity* format for every publication, work, or interview cited in the report.

(15) Appendices (Bound Separately). Include National Register of Historic Places nomination forms for all sites considered eligible and potentially eligible for listing on the National Register.

e. Final Report. Forty (40) copies of a final report and a camera ready copy shall be submitted, incorporating CERL and FLW comments on the draft report, if any, within forty-five (45) calendar days after receipt of comments. All copies of the final report shall have laminated covers. Additionally, an



electronic word processing file in Microsoft Word 6.0 or a compatible format of the Final Report shall be submitted. The reports shall be delivered to the CERL COR or a designated representative.

f. Artifacts. All artifacts shall be carefully washed, labeled, cataloged, recorded, and stored according to Federal regulations established by the Advisory Council on Historic Preservation (36 CFR Parts 79 And 800), as specified in the CERL Standards for Submission of Archeological Collections. All artifacts recovered during the course of the test excavations are the property of the U.S. Government and shall be delivered at the time of submission of the Final Report. Collections shall be stored in archival stable primary and secondary containers marked "Property of the U.S. Government FLW, Missouri".

g. All field notes, artifact inventory lists, photographs, negatives, photographic logs, maps and drawings shall be indexed, reproduced on acid-free paper, bound in archival stable binders, appropriately labeled, and submitted to CERL with the associated collections.

h. Metadata Files. The Contractor shall provide metadata files for all geospatial data produced. Geospatial data are defined as information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the earth. Geospatial data affected by these requirements are those generated in: Geographic Information Systems (GIS); Land Information Systems (LIS); Remote Sensing or Image Processing Systems; Computer-Aided Design and Drafting (CADD) systems; Automated Mapping/Facilities Management (AM/FM) systems; and other computer systems that employ or reference data using either absolute, relative, or assumed coordinates such as hydrographic surveying systems. The metadata file shall be in accordance with the terms of the basic indefinite delivery indefinite quantity contract terms. Reference Pages C-7 and C-8 of the indefinite delivery indefinite quantity contract.

**12. SCHEDULE OF DELIVERABLES:** Deliverables shall be submitted to the CERL, or authorized Government representative, as follows:

- |                             |  |
|-----------------------------|--|
| a. Monthly Progress Report: | By the 10th day of each month                                      |
| b. Research Design:         | Within thirty (30) calendar days after<br>award of the task order  |
| c. Fieldwork:               | Completed within eight (8) months<br>after award of the task order |
| d. Manager's Report:        | Within thirty (30) calendar days after<br>completion of fieldwork  |
| e. Summary Reports:         |  |

Draft:	Within twelve (12) months after award of the task order
Final:	Within fifteen (15) months after award of the task order
f. Artifacts and Associated Documentation:	Within fifteen (15) months after award of the task order

**13. PERIOD OF SERVICE:** All work to be performed under this task order shall be completed within fifteen (15) months after the date of task order award.

## **Appendix A**

### **Sites to be Evaluated for NRHP Eligibility**

23PU745    Lithic debris scatter

Late Archaic, Late Woodland

Maximum site dimensions: 200m N-S by 490m E-W

Phase I data: total 800 artifacts recovered; 64% of material from 0-10 cm below surface;  
31% of material from 10-20cm below surface; 4% of material from >20 cm below surface

23PU731    Lithic debris scatter

Late Woodland

Maximum site dimensions: 90m N-S by 40m E-W

Phase I data: total 32 artifacts recovered; 18% of material from 0-20cm below surface; 31%  
of material from 20-30cm below surface; 12% of material from 30-40cm below surface; 18%  
of material from 40-50cm below surface; 18% of material from 55-80cm below surface

23PU739    Rockshelter

Late Woodland

Maximum site dimensions: 3 x 6 meters

Phase I data: total 30 artifacts recovered; 100% of material from the surface

## Appendix B

### Standards for Submission of Archaeological Materials

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#### U.S. Army Corps of Engineers

#### Construction Engineering Research Laboratories (CERL)

#### Cultural Resources Research Center

This document outlines a series of minimum standards for the processing and curation of archaeological collections recovered by professional archaeologists under contract to the U.S. Army Corps of Engineers Construction Engineering Research Laboratories. The goal of these standards is to ensure that collections will be properly processed, documented and managed in accordance with 36 CFR Parts 79 and 800 and Army Regulation ER 1130-2-433 (Collections Management and Curation of Archeological and Historical Data).

The Contractor will be responsible for consulting with the CERL Contracting Officer's Representative (COR) in the early stages of any project regarding installation-specific curation requirements. The CERL Cultural Resources Research Center will provide technical advice and assistance in obtaining proper archival quality materials.

The following is a list of standards for the processing and storage preparation required prior to the permanent curation of both prehistoric and historic archaeological collections. The standards have been divided into three major categories: 1) General, 2) Artifacts, and 3) Records.

#### A. GENERAL

When a collection is turned over to CERL, an unbound inventory of all the associated components shall accompany the collection. The inventory shall be submitted on 8 " x 11" archival bond (acid-free) paper and contain the following information.

- a. Contractor name and address
- b. Agency sponsoring work (e.g., CERL)
- c. Project name and/or contract number (if applicable)
- d. Project type (e.g., survey, testing)
- e. Site number(s)
- f. Intrasite provenience
- g. Material and/or artifact class(es) (e.g., unmodified rock, ceramics, chipped-stone artifacts)
- h. All documentation submitted (e.g., 75 color slides, 145 black-and-white prints, survey and excavation maps)

## B. ARTIFACTS

1. All artifacts shall be washed and sorted by site number, provenience, and raw material class. Artifacts collected for specific tests (e.g., residue analysis) may be exempt from washing with approval by the CERL COR.

2. All artifacts shall be cataloged and labeled with the state or Smithsonian-type site numbers and provenience. Small specimens do not require labeling, but should be accompanied by an acid-free paper tag containing the state site number and/or provenience. Large volume, small artifact classes (e.g., tertiary flakes) from the same site and provenience may be grouped. Use PVA varnish and India ink to label most artifacts. Leather, metal, or cloth objects should be labeled using acid-free ID tags and string.

3. Artifacts illustrated or photographed for print should be labeled as such.

4. Artifacts shall be stored in zipper-type polyethylene bags (minimally 4 mil in thickness). Each bag shall be labeled with a permanent black marker to contain the site number, provenience, material or artifact class, or other pertinent information. In addition, site number and provenience data should be written with a permanent, waterproof marker on a small strip of acid-free paper or polyethylene film and included in each container. Acid-free cardboard boxes and/or unbuffered acid-free wrapping tissue may be used to protect delicate specimens. Should protective cushioning be required, as in the case of skeletal remains, polyethylene foam or polyester felt is the required product. Shredded paper, cotton, or paper towels are not acceptable. Carbon samples shall be stored in the original aluminum foil packages, if possible, and placed in a perforated polyethylene zipper-lock bag. **Collections submitted to CERL in which material classes and/or different site assemblages have been combined in secondary containers (e.g., combining all shell-tempered ceramics from more than one site) will not be accepted.**

5. All artifacts shall be placed in full-sized acid-free, corrugated board storage boxes (measuring approximately 15" x 12.5" x 10"), unless specified otherwise. Only one site may be represented in a box, unless the collections per site are so small that combining two or more sites is warranted. Boxes should be labeled with a permanent black marker according to project name (if any), contract number (if any), site number, and provenience. Clear polyester envelopes or sleeves containing acid-free labels with the required information may be attached to the storage boxes using double-coated polyester tape with a neutral adhesive.

6. An inventory sheet printed or copied on archival bond (acid-free) paper detailing the contents of each box must be included in each box. CERL recommends placing the inventory sheet(s) in a clear polyethylene bag.

## C. RECORDS

1. One (1) copy of the project final report, bound in an archival quality binder, shall accompany the collection. This document must be printed on archival bond (acid-free) paper.

2. One (1) copy of all original field documentation and laboratory analysis (including lab coding formats) will be provided. These documents must be reproduced on archival bond (acid-free) paper.

3. All pertinent maps used and generated by an archaeological project must be submitted along with the collections. This includes, but is not limited to, USGS maps, regional and project area maps, and survey and excavation maps.

4. A photographic log shall be submitted, organized according to date, film type, and subject. This document must be printed on archival bond (acid free) paper.

5. All photographic records (slides, negatives, prints) shall be enclosed in polyethylene holders or Mylar sleeves and submitted in archival quality binders. Archival photograph and slide boxes are also acceptable.

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